LGX AU145

Atom D2550 Fanless Extended Temperature Computer

User's Manual

Version 1.1

2012.11

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Declaration of Conformity

CE

The CE symbol on your product indicates that it is in compliance with the directives of the Union European (EU). A Certificate of Compliance is available by contacting Technical Support.

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from LGX. Please contact your local supplier for ordering information.

> Warning
> This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC Class A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1)This device may not cause harmful interference, and

(2)This device must accept any interference received, including interference that may cause undesired operation.

NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and

used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

RoHS

LGX systems certifies that all components in its products are in compliance and conform to to the European Union's Restriction of Use of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive 2002/95/EC/

The above mentioned directive was published on 2/13/2003. The main purpose of the directive is to prohibit the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) in electrical and electronic products. Member states of the EU are to enforce by 7/1/2006.
LGX Systems hereby states that the listed products do not contain unintentional additions of lead, mercury, hex chrome, PBB or PBDB that exceed a maximum concentration value of 0.1% by weight or for cadmium exceed 0.01% by weight, per homogenous material. Homogenous material is defined as a substance or mixture of substances with uniform composition (such as solders, resins, plating, etc.). Lead-free solder is used for all terminations (Sn(96-96.5%), Ag(3.0-3.5%) and Cu(0.5%)).

SVHC / REACH

To minimize the environmental impact and take more responsibility to the earth we live, LGX hereby confirms all products comply with the restriction of SVHC (Substances of Very High Concern) in (EC) 1907/2006 (REACH --Registration, Evaluation, Authorization, and Restriction of Chemicals) regulated by the European Union.
All substances listed in SVHC < 0.1 % by weight (1000 ppm)

Important Safety Instructions

Read these safety instructions carefully

1. Read all cautions and warnings on the equipment.
2. Place this equipment on a reliable surface when installing. Dropping it or letting it fall may cause damage
3. Make sure the correct voltage is connected to the equipment.
4. For pluggable equipment, the socket outlet should be near the equipment and should be easily accessible.
5. Keep this equipment away from humidity.
6. The openings on the enclosure are for air convection and protect the equipment from overheating. DO NOT COVER THE OPENINGS.
7. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
8. Never pour any liquid into opening. This may cause fire or electrical shock.
9. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
10. If one of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped or damaged.
    f. The equipment has obvious signs of breakage.
11. Keep this User's Manual for later reference.

About This User's Manual

This User's Manual is intended for experienced users and integrators with hardware knowledge of personal computers. If you are not sure about any description in this User's Manual, please consult your vendor before further handling.

Warning

The Box PC and its components contain very delicately Integrated Circuits (IC). To protect the Box PC and its components against damage caused by static electricity, you should always follow the precautions below when handling it:

1. Disconnect your Box PC from the power source when you want to work on the inside.
2. Use a grounded wrist strap when handling computer components.
3. Place components on a grounded antistatic pad or on the bag that came with the Box PC, whenever components are separated from the system.

Replacing the Lithium Battery

Incorrect replacement of the lithium battery may lead to a risk of explosion.

The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer.

Do not throw lithium batteries into the trash can. It must be disposed of in accordance with local regulations concerning special waste.

Technical Support

If you have any technical difficulties, please consult the user's manual first

Please do not hesitate to call or e-mail our customer service when you still cannot find out the answer.

http://www.lgxsystems.com
E-mail: info@lgxsystems.com

Warranty

This product is warranted to be in good working order for a period of one year from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party.

Vendors disclaim all other warranties, either expressed or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose, with respect to the hardware, the accompanying product's manual(s) and written materials, and any accompanying hardware. This limited warranty gives you specific legal rights.

Return authorization must be obtained from the vendor before returned merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.

Chapter 1

General Information

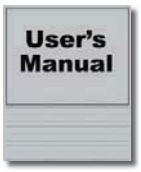
1.1 Introduction

The Box PC, LGX AU145 is targeted at many different application fields. By adopting it, you can pinpoint specific markets, such as Thin Client, KIOSK, information booth, GSM Server, environment-critical and space-critical applications.

- **All-In-One Platform**
  The CPU, DRAM and even software are integrated to provide a plug-and-play machine.
- **Compact-sized**
  The kernel of AU145 is FMB-i25 08, which is a non-standard form factor embedded board. The whole system consumes only a few space.
- **Fanless and Modular CPU Board**
  By using a low power processor, the system does not have to rely on fans, which are often unreliable and cause dust to circulate inside the equipment. The modular design facilitates maintenance or possible upgrades on the CPU board. Modular Box PC can be easily modified to fit many different applications according to customers' requests.
- **Powerful Communication Capability**
  The AU145 provides COM, Ethernet, USB, Mini Card slot, SD and DVI.
- **Numerous Display/Video Output**
  Integrated with Intel® HD Graphics core, AU145 improves graphics and 3D rendering performance and supports display/video output options includes DVI-I and DVI-D.
- **Advanced Storage Solution**
  AU145 comes with SD (Secure Digital) slot, which offers a better, faster and more cost-effective expansibilities for various applications.
- **Trustworthy**
  The onboard Watchdog Timer can invoke an NMI or system RESET when your application loses control over the system.

1.2 Packing List

After opening the package, carefully inspect the contents. If any of the items is missing or appears damaged, please contact your local dealer or distributor. The package should contain the following items:

	1 x LGX AU145
	1 x Driver CD
	1 x User's Manual

1.3 Ordering Information

LGX AU145	Barebone system w/o storage device and memory

The following items are normally optional, but some vendors may include them as a standard package, or some vendors may not carry all the items.

Optional Configuration (Configure to Order Service)	
	MEMORIGHT, MRSAJ5D032GC225C00 2.5" 32GB SATAII SSD
	MEMORIGHT, MRSAJ5D016GC125C00 2.5" 16GB SATAII SSD

	MM-3C-4G DDR3-1333 4GB SDRAM
	MM-3C-2G DDR3-1333 2GB SDRAM
	WIFI-IN1130 Intel® Centrino® Advanced-N 6205 WiFi module w/ 10cm & 20cm internal wiring
	ANT-D11 1 x WiFi Dual-band 2.4G/5G antenna

1.4 The Installation Paths of CD Driver

Windows 7-32bit

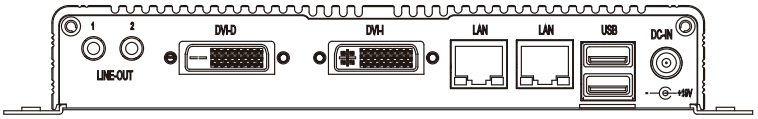
Driver	Path
CHIPSET	\Chipset\Win7_x86
VGA	\VGA\Win7_x86
LAN	\LAN\Install_Win7_7048_09162011
AUDIO	\Audio ALC662\Win 7(32, 64 bits) Driver_R2.66

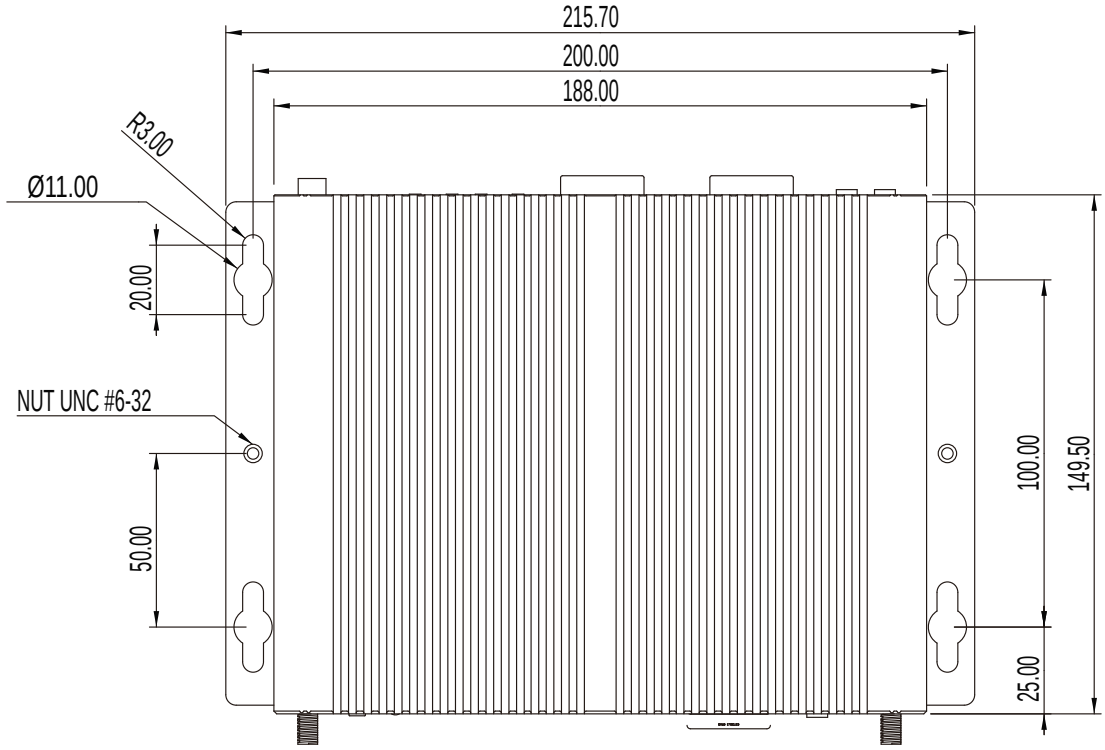
1.5 Specifications

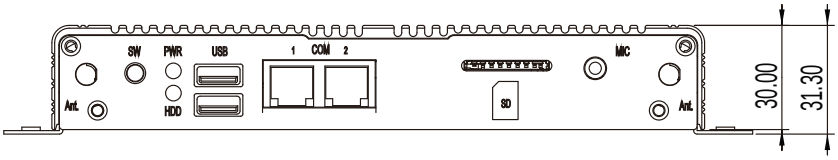
System Kernel	
Processor	Soldered onboard Intel® Atom™ D2550 1.86GHz processor
BIOS	AMI Flash BIOS
Chipset	Intel® NM10
Graphics	Integrated Intel® GMA 3650
System Memory	1 x 204-pin DDR3 SO-DIMM Socket, supporting 800/1066MHz SDRAM up to 4GB
Serial ATA	1 x Serial ATA port with 300MB/s HDD transfer rate
Ethernet Controller	2 x Realtek 8111 Gigabit Ethernet controllers
Watchdog Timer	1 ~ 255 levels reset
I/O Ports	
Serial Port	• 2 x RJ-45 ports • Support COM1 RS-232 • Support COM2 RS-232/422/485 selectable
Expansion Bus	1 x Mini-card slot for optional WiFi module
USB Port	4 x USB 2.0 ports
LAN	2 x RJ-45 ports for Gigabit Ethernet
Video Port	• 1 x DVI-I female connector for Digital Video output • 1 x DVI-D female connector for Digital Video output
Audio	Mic-in/ 2 x Line-out (500mW pre-amplified)
Storage	
Type	• 1 x 2.5” drive bay for HDD/SSD • 1 x SD Socket which can be outside accessible
Qualification	
FCC	Class A certified
CE	Certified
Environmental	
Operating Temp.	-25 ~ 55ºC (-13 ~ 131ºF), ambience w/ air flow
Storage Temp.	-40 ~ 85ºC (-40 ~ 185ºF)
Relative Humidity	10 ~ 95% @ 40ºC (non-condensing)

Vibration	3 Grms/5 ~ 500 Hz/random operation
Shock & Crash	• Operating 20G (11ms), Non-operating 60G with HDD • Operating 40G (11ms), Non-operating 80G with SSD
Mechanical	
Construction	Aluminum alloy
Mounting	Support VESA-mount 200x100 mm/wall-mounting
Weight	0.93 kg (2.05 lb) (Bare-bone)
Dimensions (W x D x H)	188 x 149.5 x 30 mm (7.40” x 5.88” x 1.18”)
Power Requirement	
Power Input	DC 19V input
Power Consumption	Max. 25W (w/o I/O card)

1.6 Dimensions





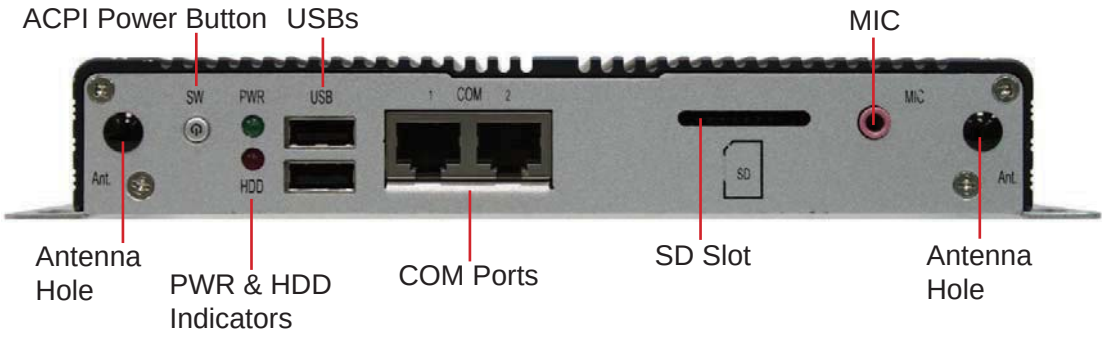


Unit: mm

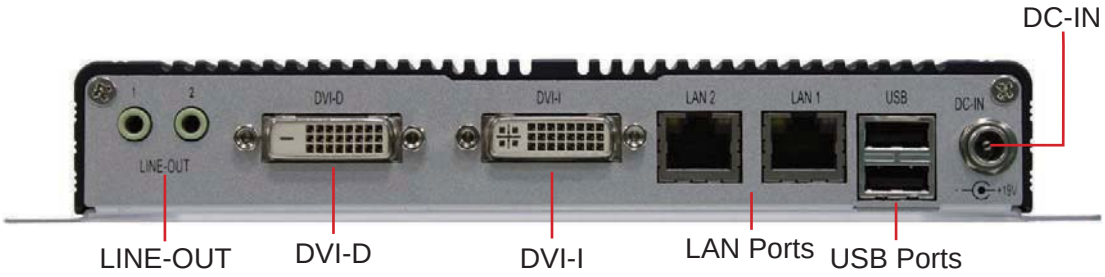
1.7 Locating Controls and Connectors

Please take a moment to identify those controls and connectors shown in the following figures.

Front Panel



Rear Panel



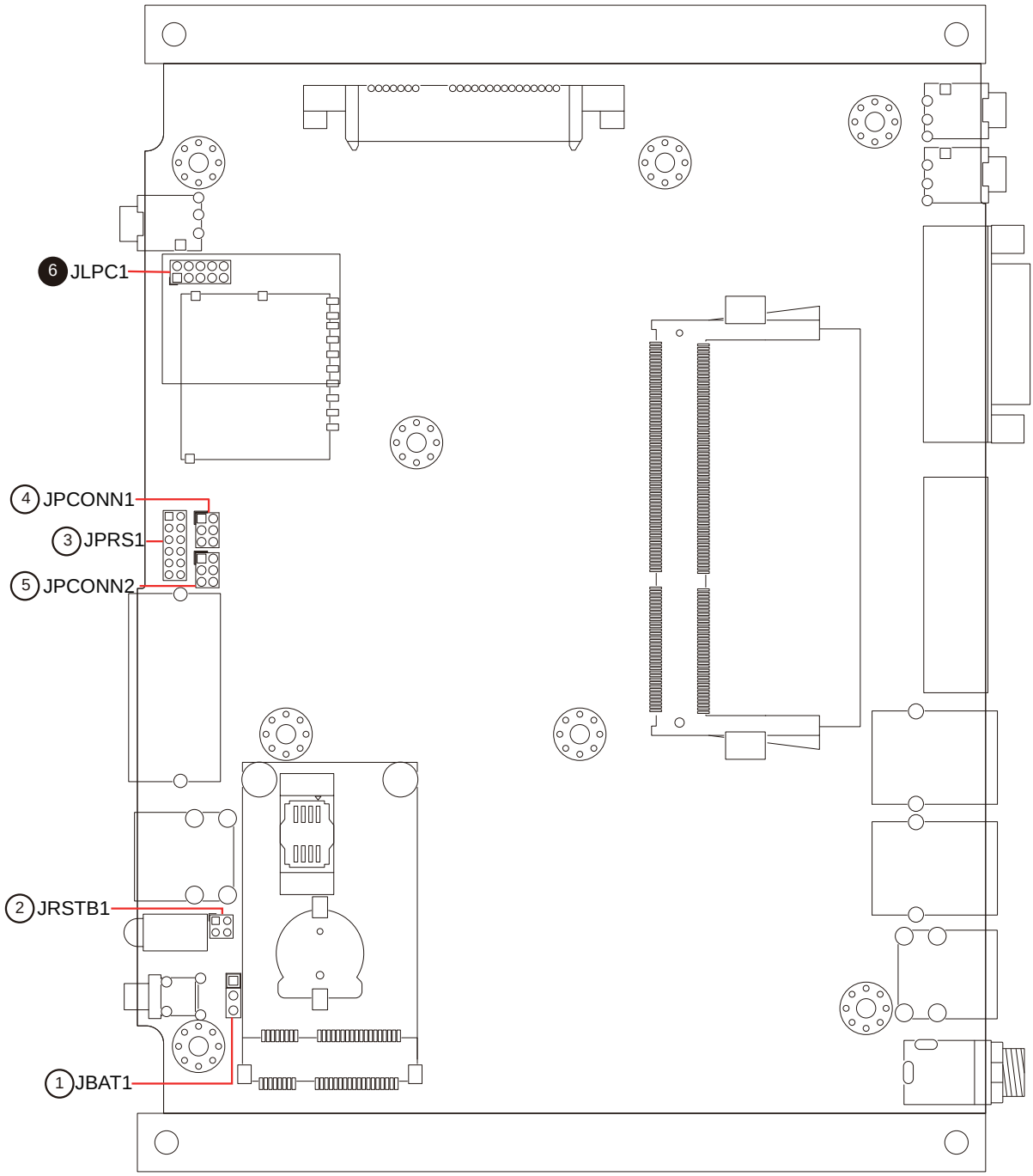
Side View

Chapter 2

The Engine of LGX AU145

2.1 Board Layout

The engine of AU145 is FMB-i2508.



2.2 Jumpers and Connectors

2.2.1 Jumpers & Connectors List

Jumpers

Label	Function
JBAT1	Clear CMOS Setting
JRSTB1	AT/ATX Power Mode Selector
JPRS1	JCOM2 RS232/422/485 Setting
JPCONN1	JCOM2 RS232/422/485 Setting
JPCONN2	JCOM2 RS232/422/485 Setting

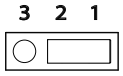
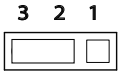
Connectors

Label	Function
JLPC1	External 80 Port Pin Header

2.2.2 Jumper Setting

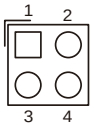
JBAT1: Clear CMOS Setting (1)

Connector type: 2.54mm pitch 1x3-pin header.

Pin	Description	
1-2	Keep CMOS (Default)	
2-3	Clear CMOS	

JRSTB1: AT/ATX Power Mode Selector (2)

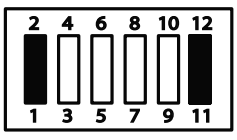
Connector type: Onboard 2x4-pin 2.0mm pin header.

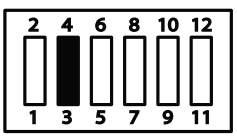
Pin	Description	
NC	ATX Mode (Default)	
3-4	AT Mode	

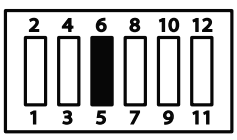
JPRS1: JCOM2 RS232/422/485 Setting (3)

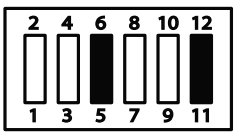
Connector type: Onboard 2x6-pin 2.0mm pin header.

Pin	RS-232 Mode (Default)	RS-422 Mode	RS-485 Mode	
			Auto-flow On	Auto-flow Off
1-2	SHORT	OPEN	OPEN	OPEN
3-4	OPEN	SHORT	OPEN	OPEN
5-6	OPEN	OPEN	SHORT	SHORT
7-8	OPEN	OPEN	OPEN	OPEN
9-10	OPEN	OPEN	OPEN	OPEN
11-12	SHORT	OPEN	OPEN	SHORT



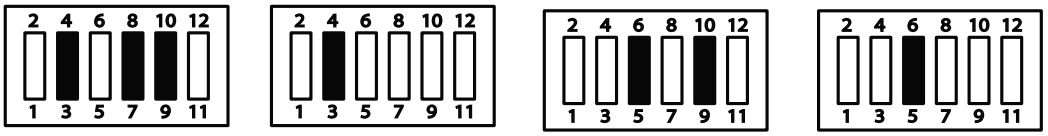






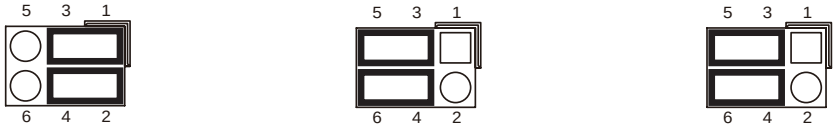
Connect terminators in parallel in RS-422/485 mode for COM2.

Pin	RS-422 Mode		RS-485 Mode	
	On	Off (Default)	On	Off (Default)
1-2	OPEN	OPEN	OPEN	OPEN
3-4	SHORT	SHORT	OPEN	OPEN
5-6	OPEN	OPEN	SHORT	SHORT
7-8	SHORT	OPEN	OPEN	OPEN
9-10	SHORT	OPEN	SHORT	OPEN
11-12	OPEN	OPEN	OPEN	OPEN



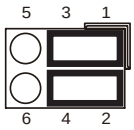
JPCONN1: JCOM2 RS232/422/485 Setting (4)
Connector type: Onboard 2x3-pin 2.0mm pin header.

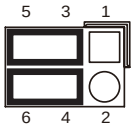
	RS-232 Mode (Default)	RS-422 Mode	RS-485 Mode
Short Pin	1-3	3-5	3-5
	2-4	4-6	4-6

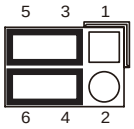


JPCONN2: JCOM2 RS232/422/485 Setting (5)
Connector type: Onboard 2x3-pin 2.0mm pin header.

	RS-232 Mode (Default)	RS-422 Mode	RS-485 Mode
Short Pin	1-3	3-5	3-5
	2-4	4-6	4-6



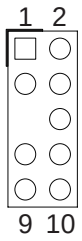




2.2.3 Pin Assignments for Connectors

JLPC1: External 80 Port Pin Header (6)
Connector type: Onboard 2.00mm pitch 10-pin header.

Pin	Description	Pin	Description
1	CLOCK	2	GND
3	FRAME	4	LAD0
5	RESET	6	NC
7	LAD3	8	LAD2
9	VCC3	10	LAD1



Chapter 3

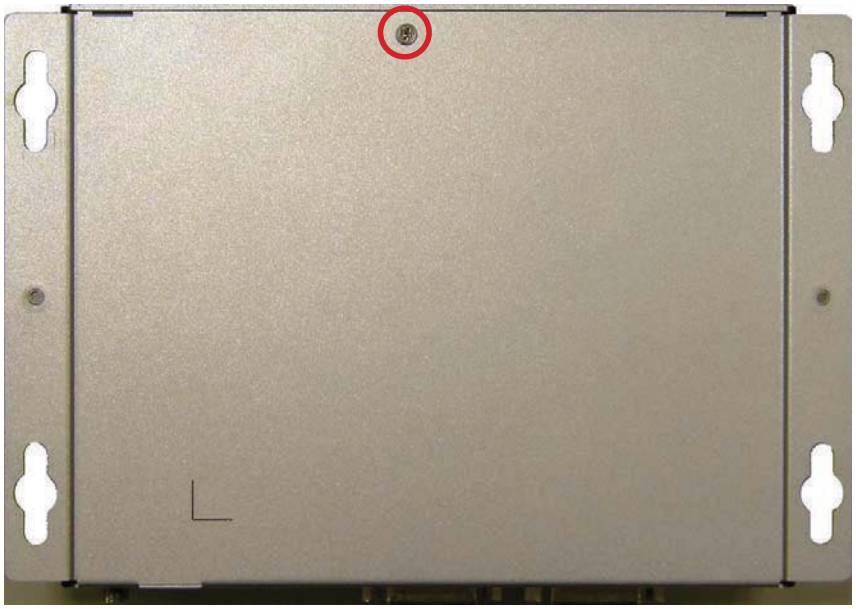
Installation and Maintenance

3.1 Memory, WiFi & HDD Installation

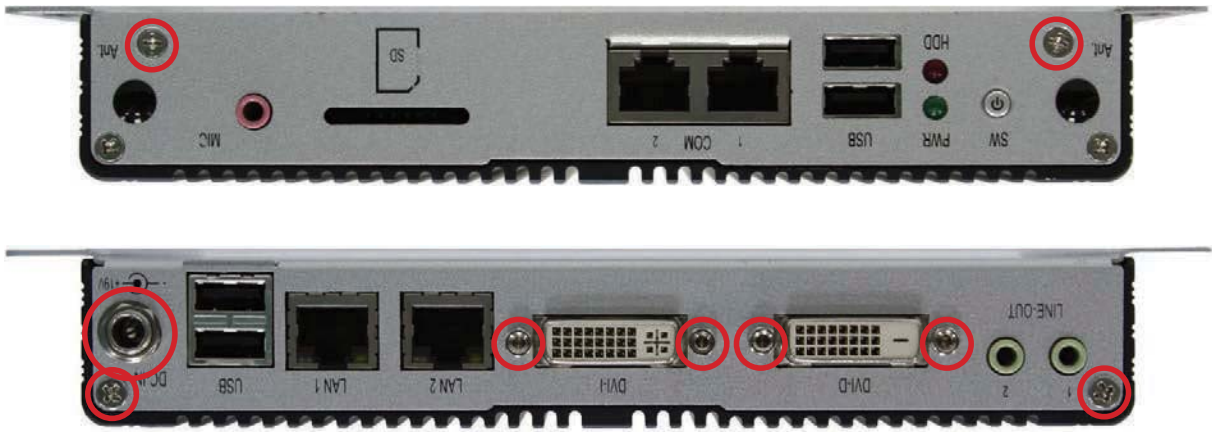
The AU145 is designed to be modular, slim and lightweight for easier maintenance. The following sections describe simple hardware installations.

3.1.1 Removing Bottom Cover

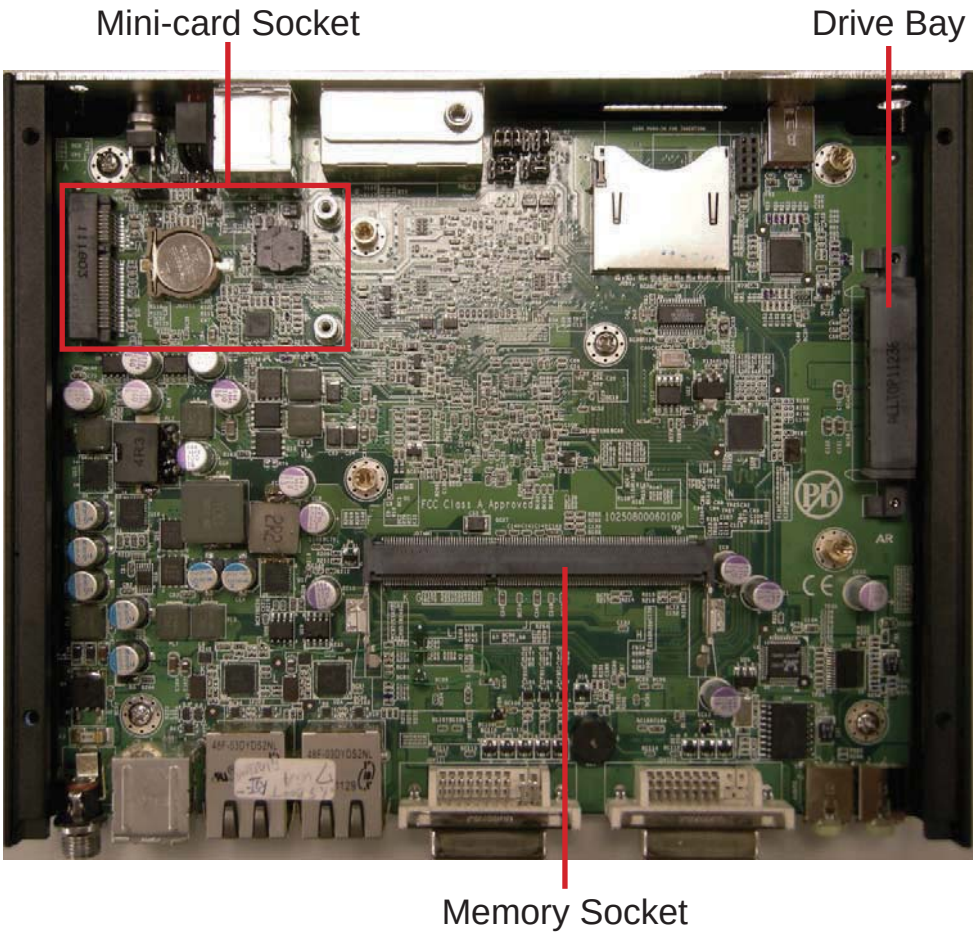
1. Carefully place the Box PC upside down. Unscrew the screw securing the bottom cover with cross-head screwdriver. Retain it safely for later use, so do the rest components we are going to remove.



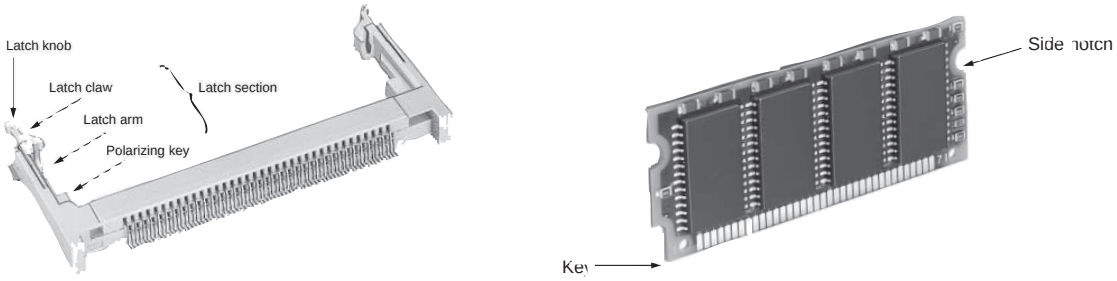
2. Turn to the front panel and loosen two screws close to botoom plate. Then, turn to another side to unscrew two screws at corners. Locate four hex standoffs beside DVI-I & DVI-D. Unscrew them with special hex driver. You also have to take off washer and nut from DC-IN connector. Carefully unmount the one-piece bottom cover from main unit.



3. Gently pull the bottom cover upward.

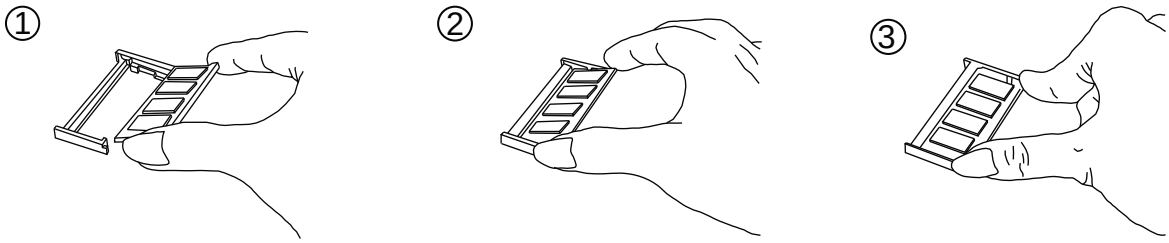


3.1.2 Installing Memory Module



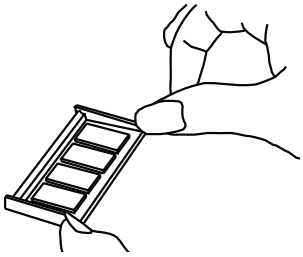
To install the Memory module, locate the Memory SO-DIMM slot on the board and perform as below:

1. Adjust the socket polarizing key and the board key to the same direction.
2. Insert the board obliquely. Moreover, lay the board in parallel to the opening at angle of 20^{o} to 30^{o}, and softly insert the board so as to hit the socket bottom. Stopping insertion halfway will result in improper insertion.
3. Applying the board side notch in parallel to the socket bottom so that the board position cannot be displaced, press the board side notch up, and fix it to the latch portion at both socket edges. Press the board side notch, and release the notch with a snap “click” tone, if the printed board exceeds the latch claw head.



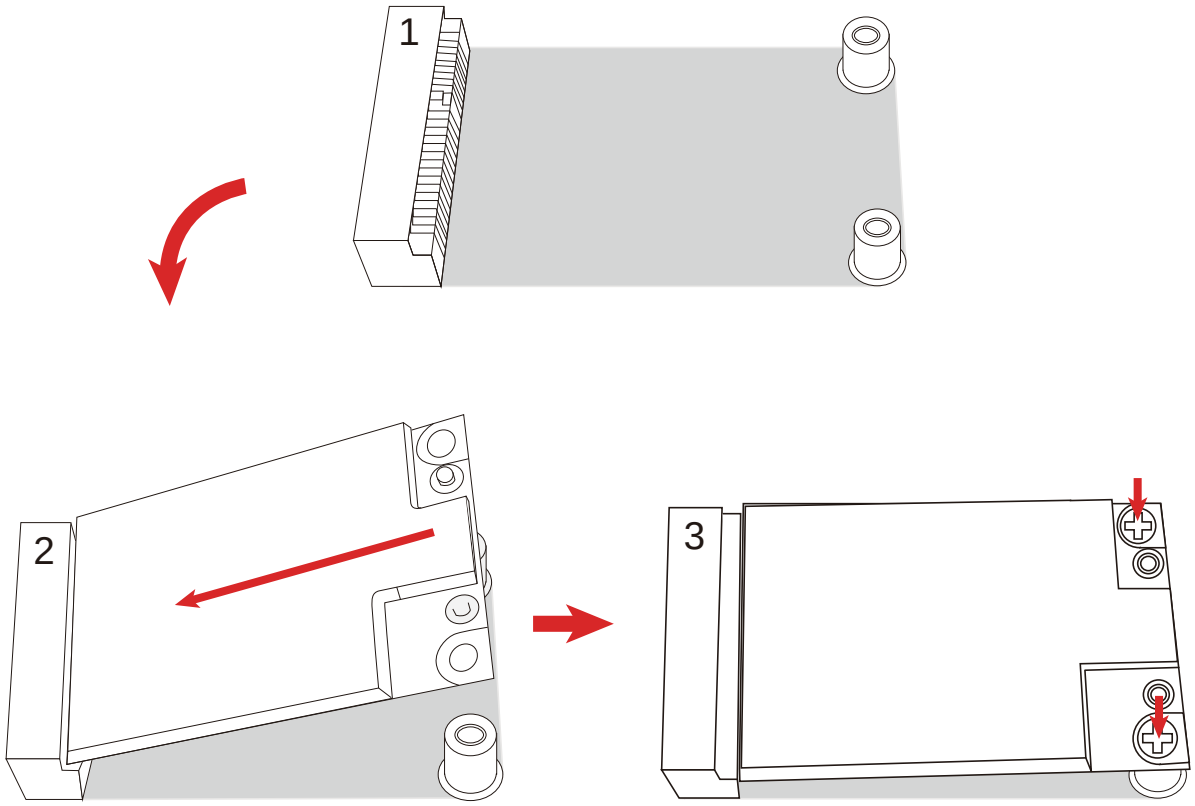
Procedures for board extraction

Apply the thumb nail to the latch knob at both socket edges. Forcibly widen the latch knobs to right and left ways, and release the latch. Then draw the board out along an angle where the board is raised.



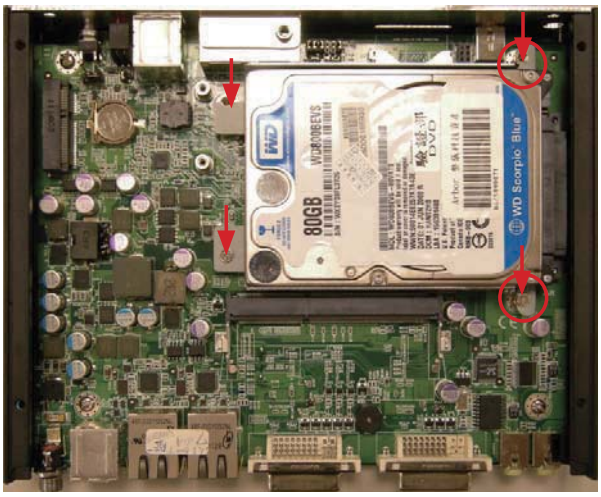
3.1.3 Installing WiFi Module

1. Locate Mini-card socket.
2. Insert WiFi module into its slot at a slanted angle. Remember to align the notch with the break on slot.
3. And then, secure two screws to fasten the module.



3.1.4 Installing Hard Disk Drive

1. Fasten HDD on its bracket.
2. Insert the bracket into driver bay and secure its corners from two screws at right side first.



3.2 How to Access SD Card

1. Make sure you have turned off the power before inserting or ejecting the SD card (if OS is installed on SD card).
2. Locate the SD card slot on the front panel.
3. Insert your SD card into the slot. To remove the SD card, push that inwards to pop it out.

Chapter 4

Driver & AP

4.1 Preliminary work

After everything mentioned before is settled down, and now, you need to install the necessary drivers and the application so that the box PC's functions can operate normally. The following instructions take Windows 7 as the exemplary OS. Different OS may vary slightly, but generally speaking, they are almost the same. Be assured that appropriate installation procedure is as below:

CHIPSET→VGA→AUDIO→LAN

Please **Follow This Procedure** to install all necessary units in most cases, or you may encounter errors.

Also, the correct driver & AP paths for Windows 7 & Windows XP are listed below. You should follow the suggested paths to proceed with installation.

Windows 7-32bit

Driver	Path
CHIPSET	\Chipset\Win7_x86
VGA	\VGA\Win7_x86
LAN	\LAN\Install_Win7_7048_09162011
AUDIO	\Audio ALC662\Win 7(32, 64 bits) Driver_R2.66

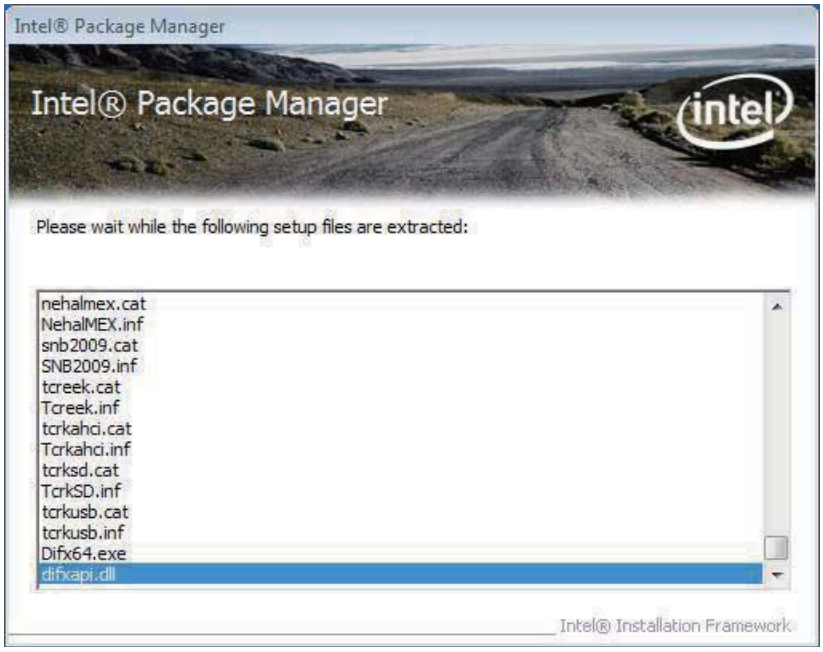
4.2 Drivers

4.2.1 CHIPSET

1. Execute “infinst_autol.exe” in the suggested path (\Chipset\Win7_x86). Always click Yes whenever Windows 7 inquires you “Do you want to allow the following programs to make changes to this computer?” Click “Next >”.

Intel® Chipset Device Software
Intel® Chipset Device Software
intel
Welcome to the Setup Program
This setup program will install the Intel® Chipset Device Software onto this computer. It is strongly recommended that you exit all programs before continuing.
< Back
Next >
Cancel
Intel® Installation Framework

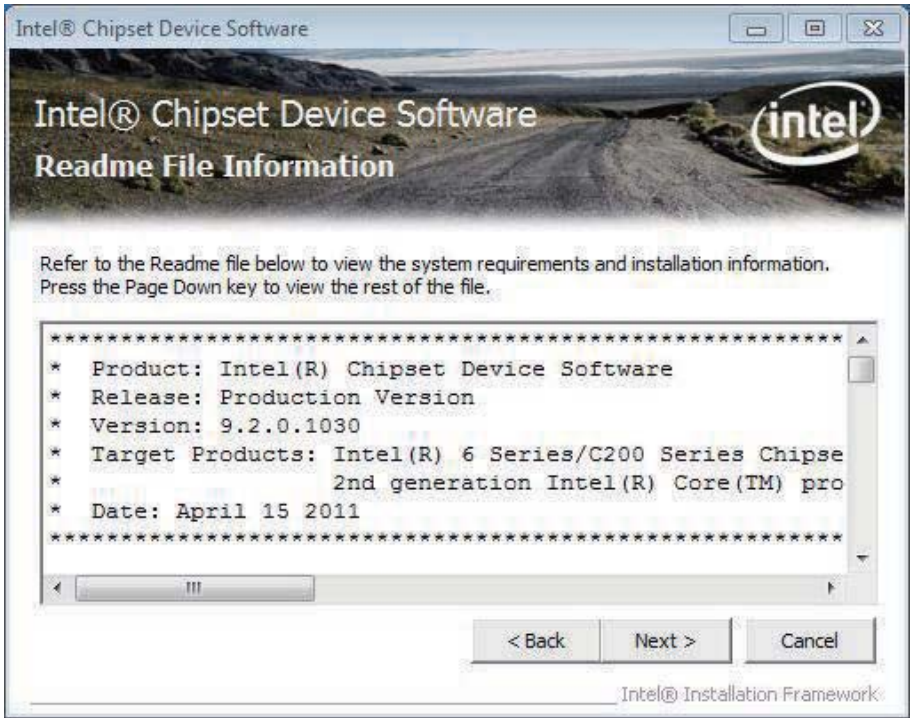
2. Wait for extracting.



3. Click “Yes >”.

Intel® Chipset Device Software
Intel® Chipset Device Software
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

4. Click “Next >”.


Intel® Chipset Device Software
Intel® Chipset Device Software
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
Press the Page Down key to view the rest of the file.
****
* Product: Intel(R) Chipset Device Software
* Release: Production Version
* Version: 9.2.0.1030
* Target Products: Intel(R) 6 Series/C200 Series Chipse
* 2nd generation Intel(R) Core(TM) pro
* Date: April 15 2011
****
< Back
Next >
Cancel
Intel® Installation Framework

5. Click “Finish >”.

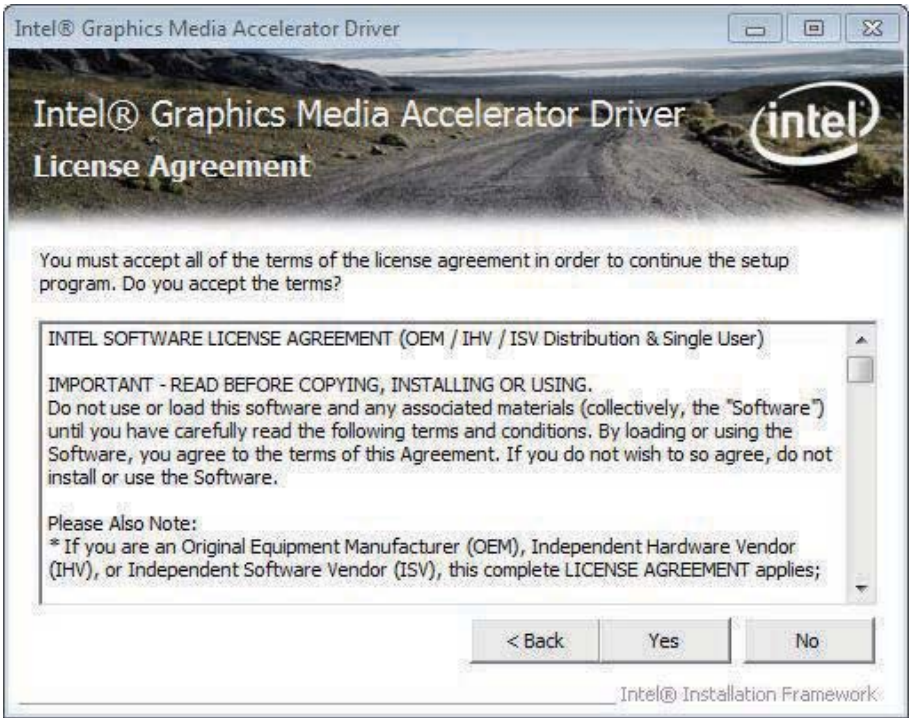
Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Is Complete
intel
The setup program successfully installed the Intel® Chipset Device Software onto this computer.
Click Finish to complete the setup process.
Finish
Intel® Installation Framework

4.2.2 VGA

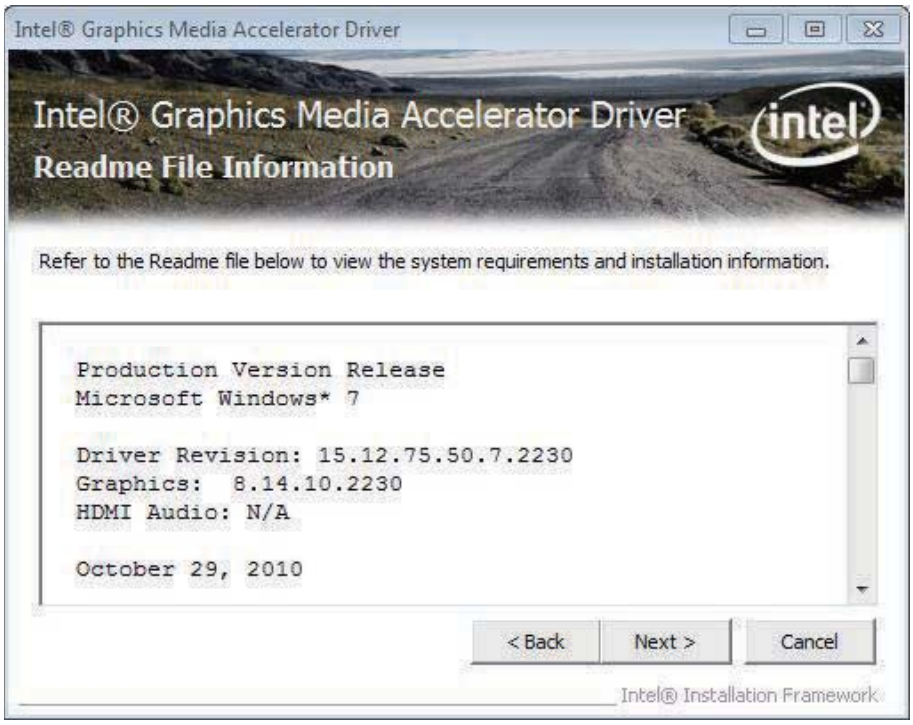
1. Execute “Setup.exe” in the suggested path (\VGA\Win7_x86). Click “Next >”.

Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
intel
Welcome to the Setup Program
This setup program will install the Intel® Graphics Media Accelerator Driver onto this computer. It is strongly recommended that you exit all programs before continuing. Click Next to continue.
Automatically run WinSAT and enable the Windows Aero desktop theme (if supported).
< Back
Next >
Cancel
Intel® Installation Framework

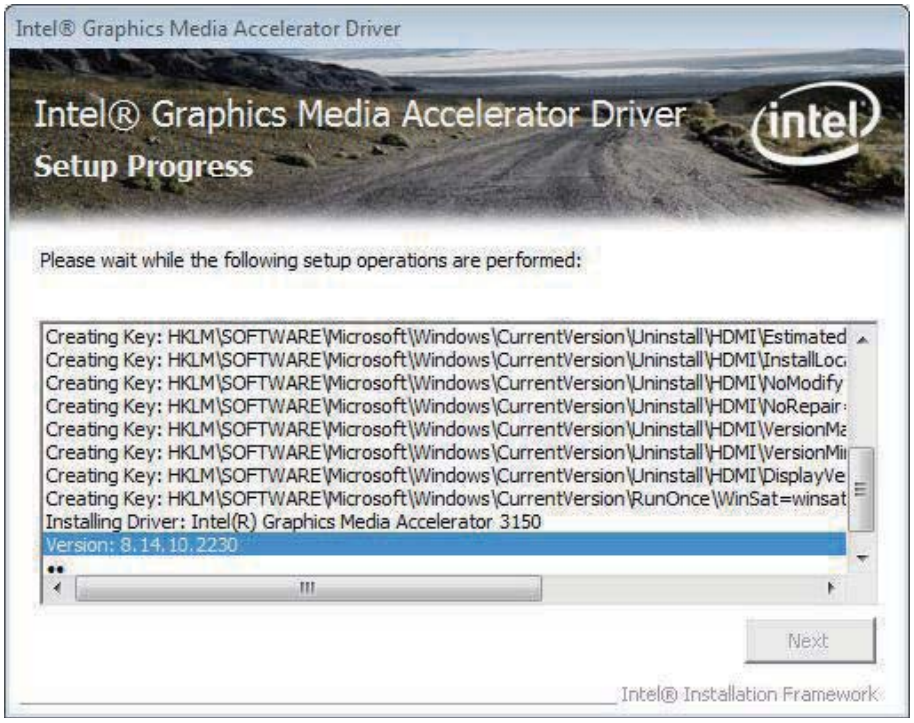
2. Click “Yes >”.


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
License Agreement
intel
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

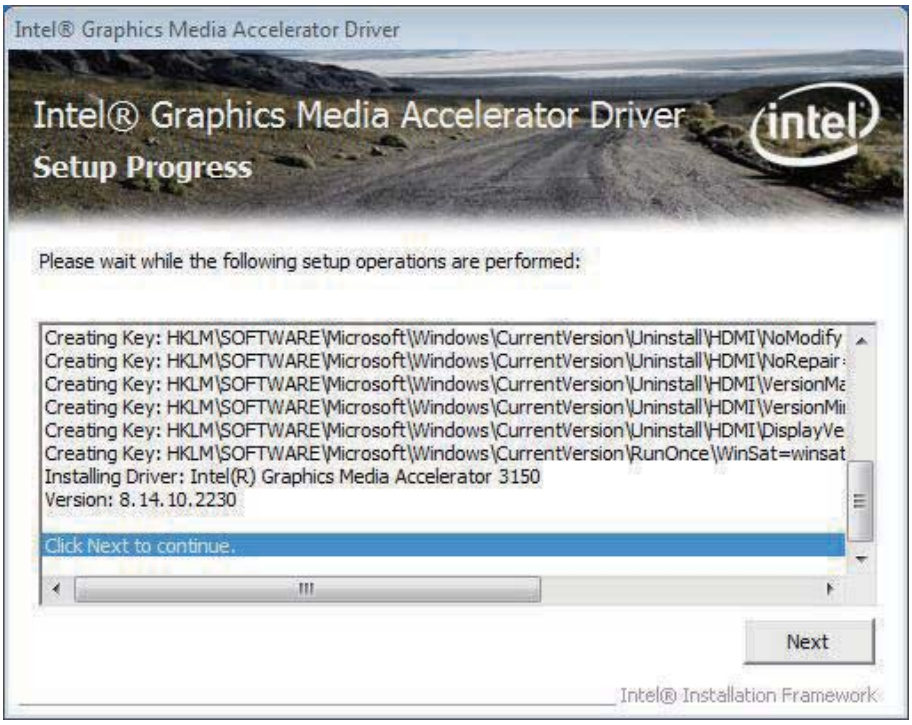
3. Click “Next >”.



4. Wait for the process.



5. Click “Next >”.



6. Click “Yes >” to restart computer.

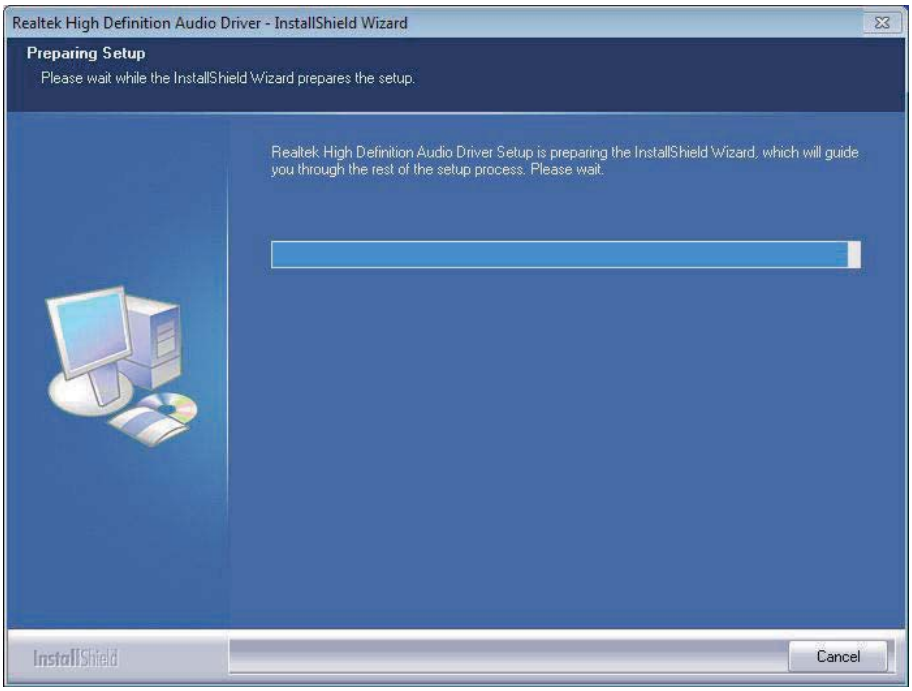
Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Setup Is Complete
intel
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

4.2.3 Audio

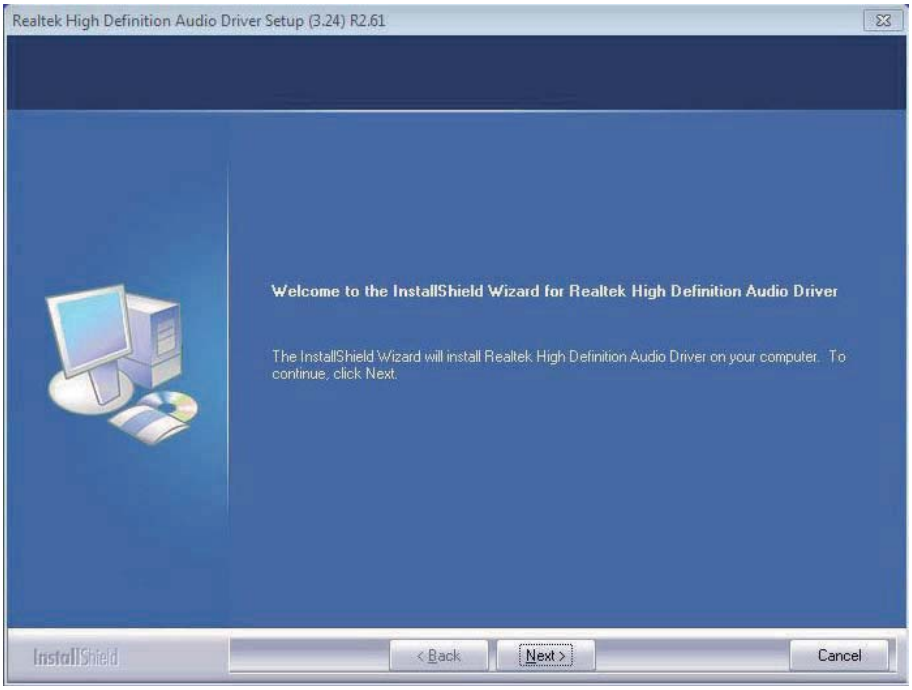
1. Execute “Vista_Win7_R261-32_64.exe” in the suggested path [\Audio ALC662\Win 7(32, 64 bits) Driver_R2.66]. Wait for extracting.

Realtek HD Audio - InstallShield Wizard
Extracting Files
The contents of this package are being extracted.
Please wait while the InstallShield Wizard extracts the files needed to install Realtek HD Audio on your computer. This may take a few moments.
Extracting DTSLFXAPO64.dll...
InstallShield
< Back
Next >
Cancel

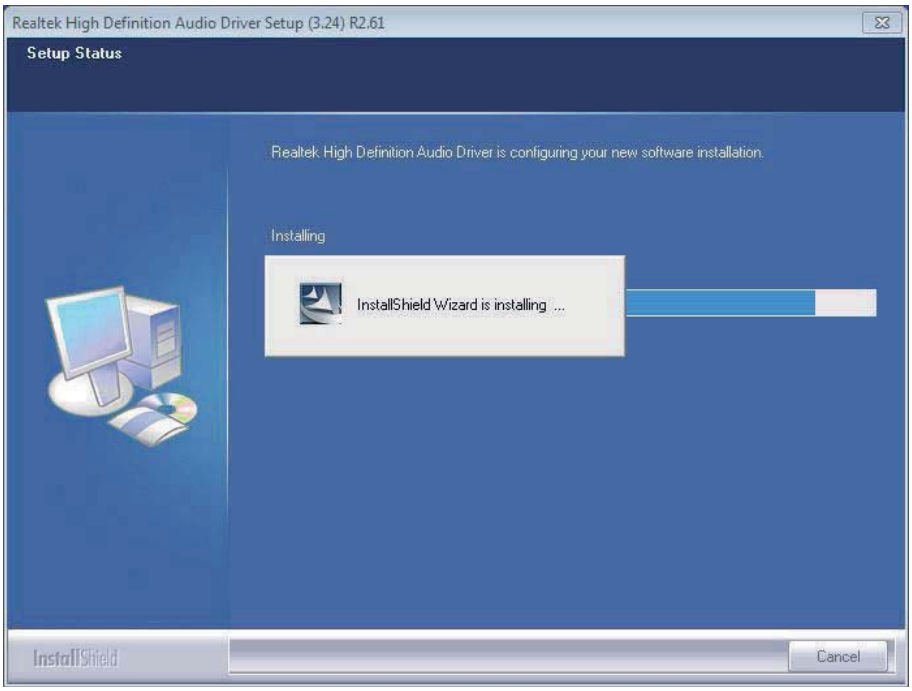
2. Keep waiting.


Realtek High Definition Audio Driver - InstallShield Wizard
Preparing Setup
Please wait while the InstallShield Wizard prepares the setup.
Realtek High Definition Audio Driver Setup is preparing the InstallShield Wizard, which will guide you through the rest of the setup process. Please wait.
InstallShield
Cancel

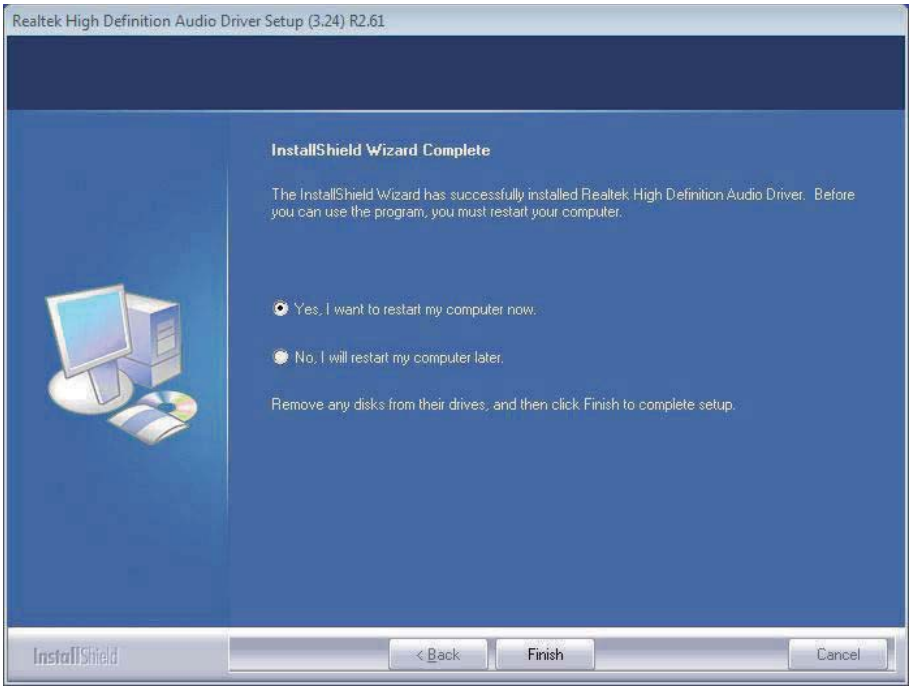
3. Click “Next >”.


Realtek High Definition Audio Driver Setup (3.24) R2.61
Welcome to the InstallShield Wizard for Realtek High Definition Audio Driver
The InstallShield Wizard will install Realtek High Definition Audio Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

4. Wait for the process.

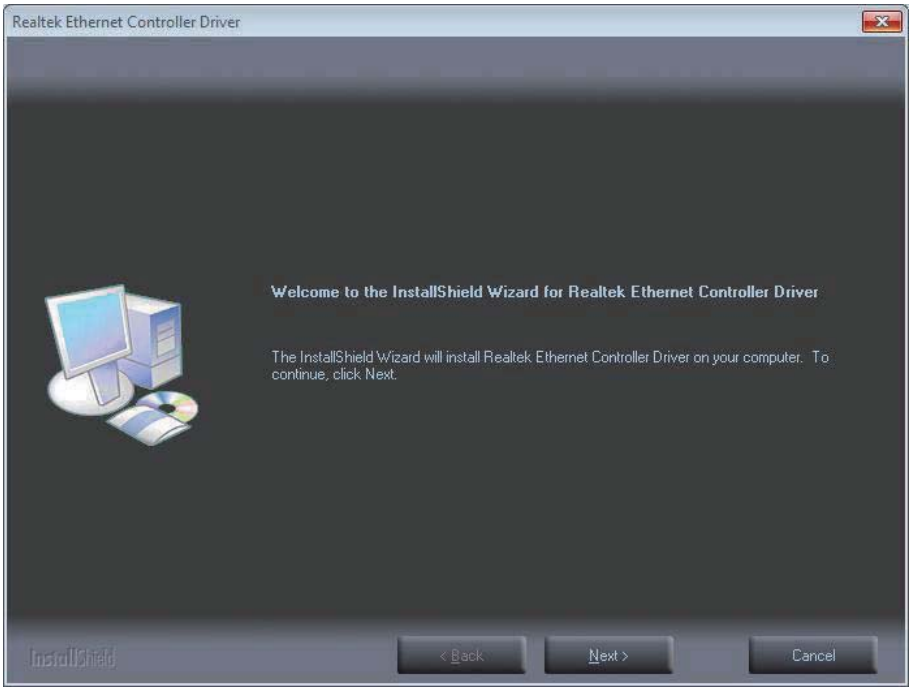

Realtek High Definition Audio Driver Setup (3.24) R2.61
Setup Status
Realtek High Definition Audio Driver is configuring your new software installation.
Installing
InstallShield Wizard is installing ...
InstallShield
Cancel

5. Click “Yes >” to restart computer.

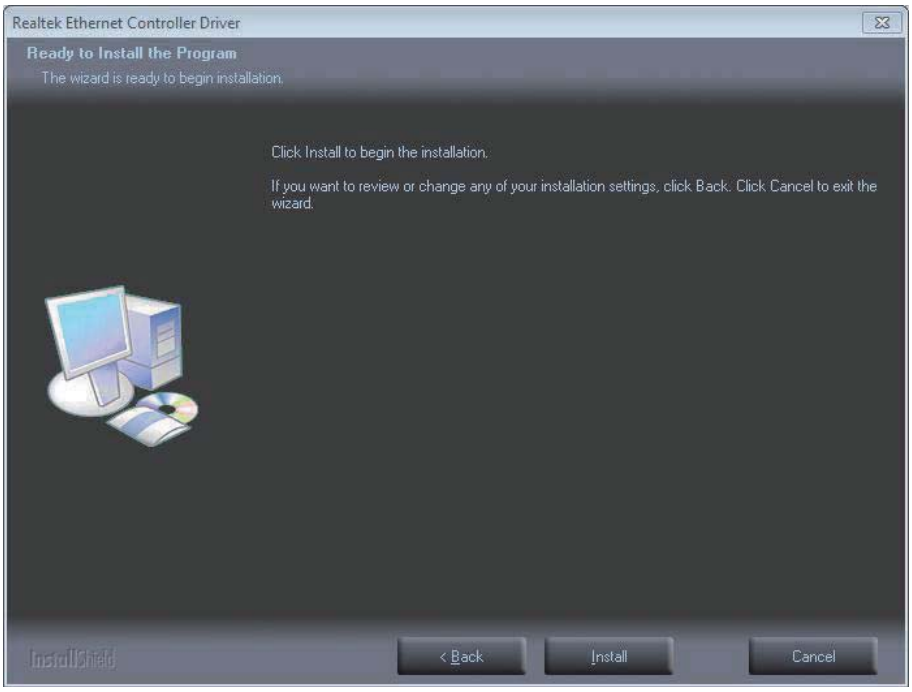

Realtek High Definition Audio Driver Setup (3.24) R2.61
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed Realtek High Definition Audio Driver. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
InstallShield
< Back
Finish
Cancel

4.2.4 LAN

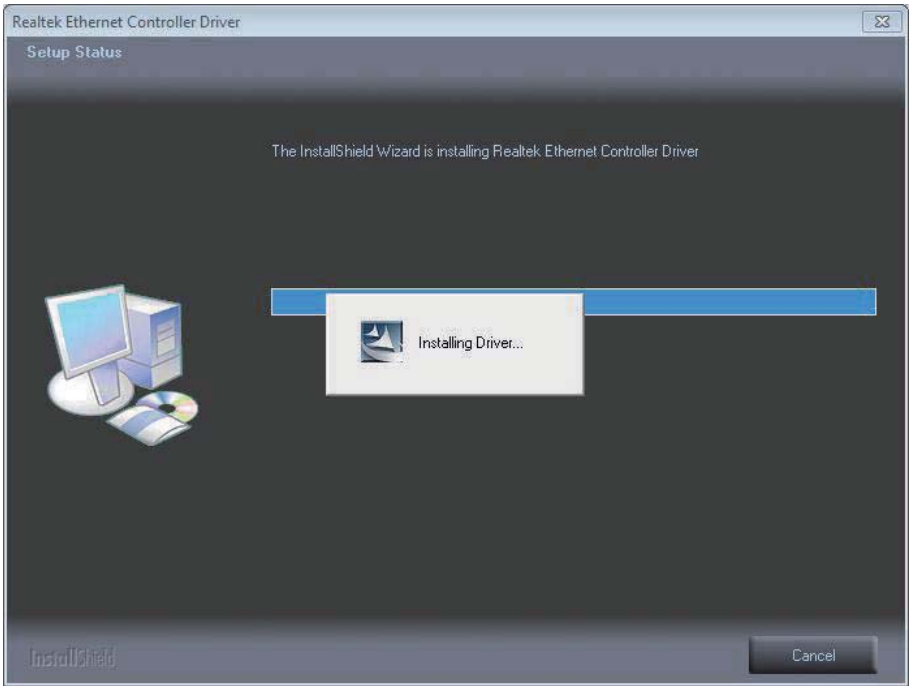
1. Execute “setup.exe” in the suggested path (\LAN\Install_ Win7_7048_09162011). Click “Next >”.


Realtek Ethernet Controller Driver
Welcome to the InstallShield Wizard for Realtek Ethernet Controller Driver
The InstallShield Wizard will install Realtek Ethernet Controller Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

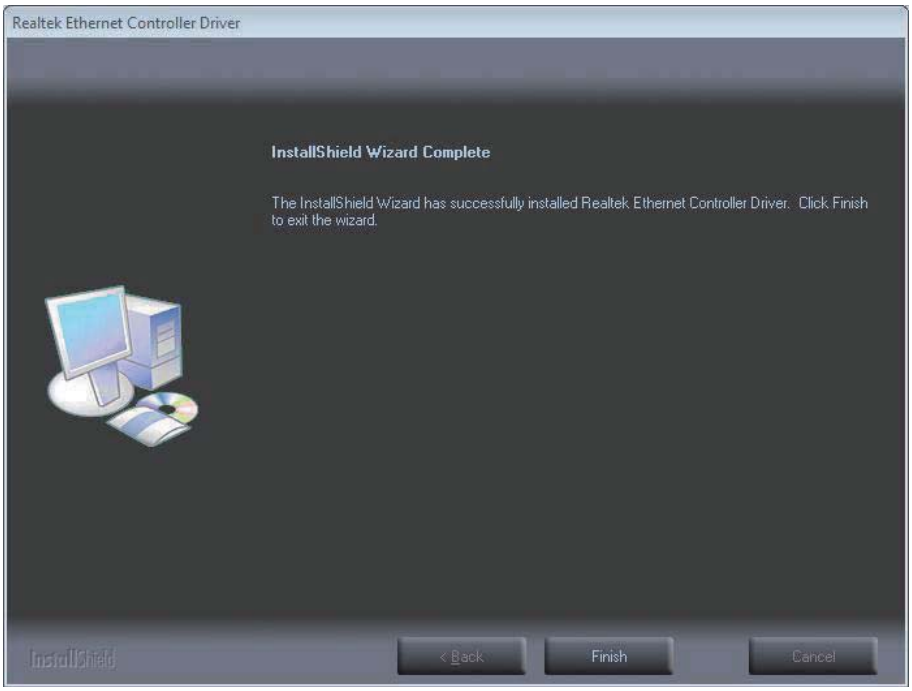
2. Click “Install >”.


Realtek Ethernet Controller Driver
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

3. Wait for the process.



4. Click “Finish >”.


Realtek Ethernet Controller Driver
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed Realtek Ethernet Controller Driver. Click Finish to exit the wizard.
InstallShield
< Back
Finish
Cancel

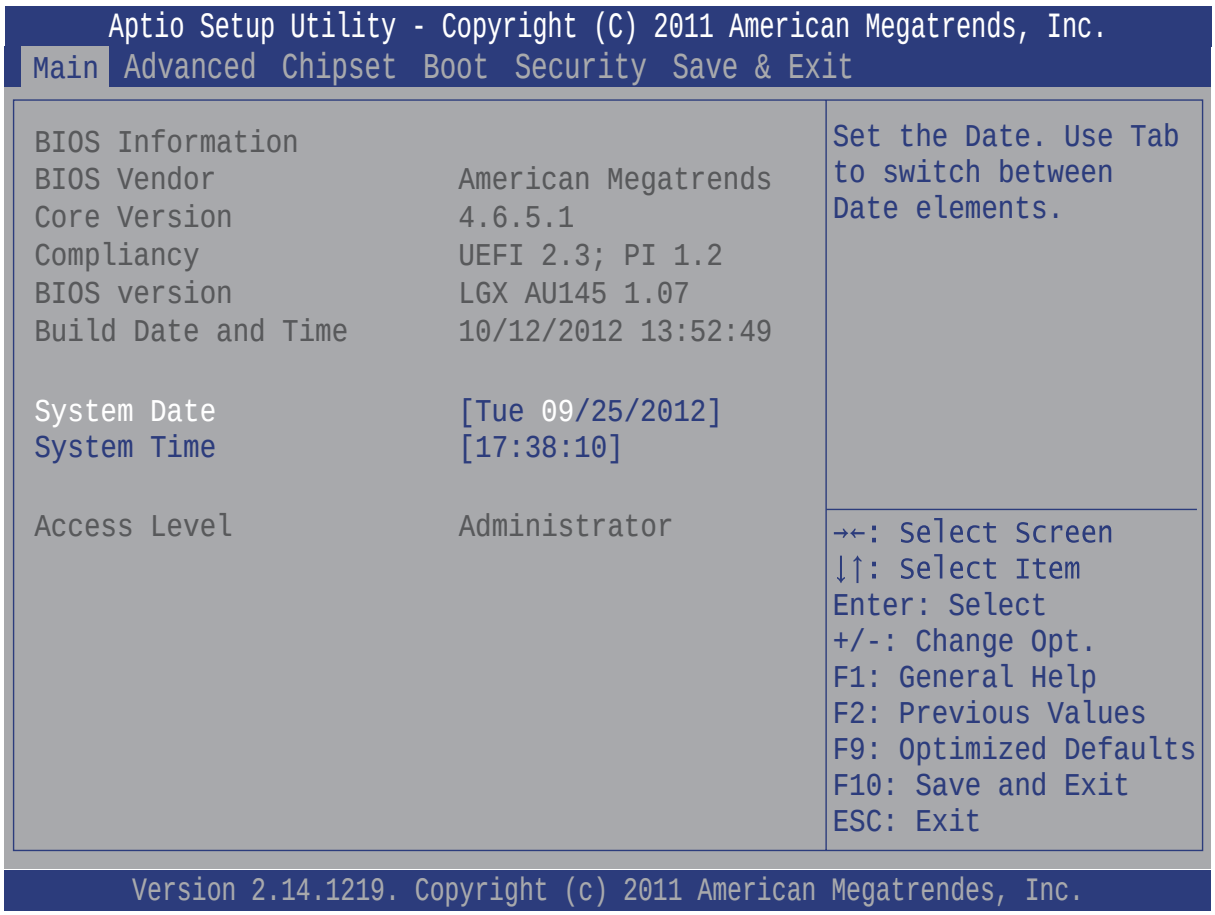
Chapter 5

BIOS

5.1 Main

The AMI BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS RAM of the system stores the Setup utility and configurations. When you turn on the computer, the AMI BIOS is immediately activated. To enter the BIOS SETUP UTILITY, press **"Delete"** once the power is turned on. When the computer is shut down, the battery on the motherboard supplies the power for BIOS RAM.

The **Main Setup** screen lists the following information:


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
BIOS Information
BIOS Vendor American Megatrends
Core Version 4.6.5.1
Compliancy UEFI 2.3; PI 1.2
BIOS version LGX AU145 1.07
Build Date and Time 10/12/2012 13:52:49
System Date [Tue 09/25/2012]
System Time [17:38:10]
Access Level Administrator
Set the Date. Use Tab to switch between Date elements.
→←: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit
Version 2.14.1219. Copyright (c) 2011 American Megatrendes, Inc.

Setting	Description
BIOS Information	
BIOS Vendor	displays vendor name
Core Version	displays current core version information
Compliancy	displays compliant format
BIOS Version	displays current BIOS version information
Build Date and Time	the date that the BIOS version was made/updated

System Date	Set the system date. Note that the 'Day' automatically changes when you set the date. ► The date format is: **Day:** Sun to Sat **Month:** 1 to 12 **Date:** 1 to 31 **Year:** 1998 to 2099
System Time	Set the system time. ► The time format is: **Hour:** 00 to 23 **Minute:** 00 to 59 **Second:** 00 to 59

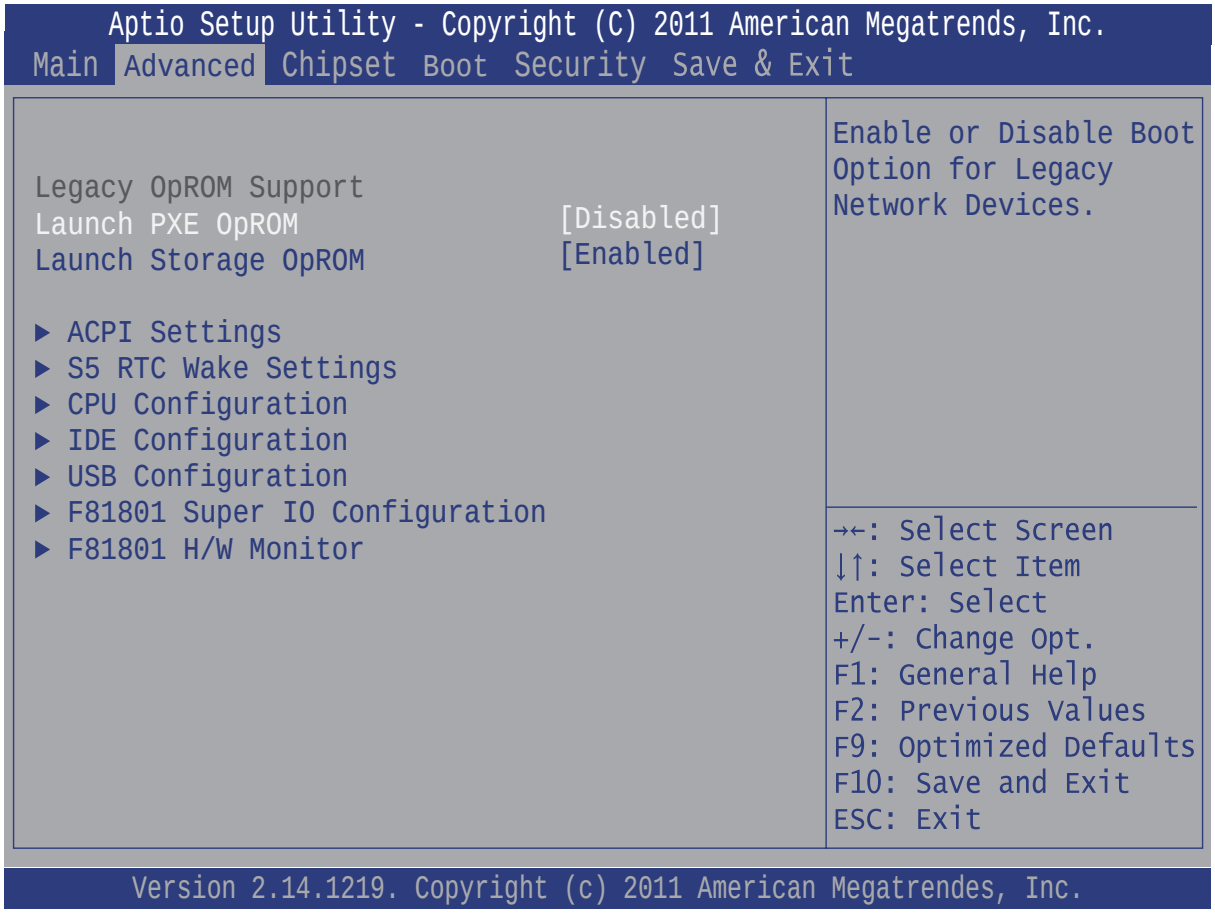
Key Commands

BIOS Setup Utility is mainly a key-based navigation interface. Please refer to the following key command instructions for navigation process.

Keystroke	Function
◄ ►	Move to highlight a particular configuration screen from the top menu bar / Move to highlight items on the screen
▼ ▲	Move to highlight previous/next item
Enter	Select and access a setup item/field
Esc	On the Main Menu – Quit the setup and not save changes into CMOS (a message screen will display and ask you to select "OK" or "Cancel" for exiting and discarding changes. Use "←" and "→" to select and press "Enter" to confirm) On the Sub Menu – Exit current page and return to main menu
Page Up / +	Increase the numeric value on a selected setup item / make change
Page Down -	Decrease the numeric value on a selected setup item / make change
F1	Activate "General Help" screen
F10	Save the changes that have been made in the setup and exit. (a message screen will display and ask you to select "OK" or "Cancel" for exiting and saving changes. Use "←" and "→" to select and press "Enter" to confirm)

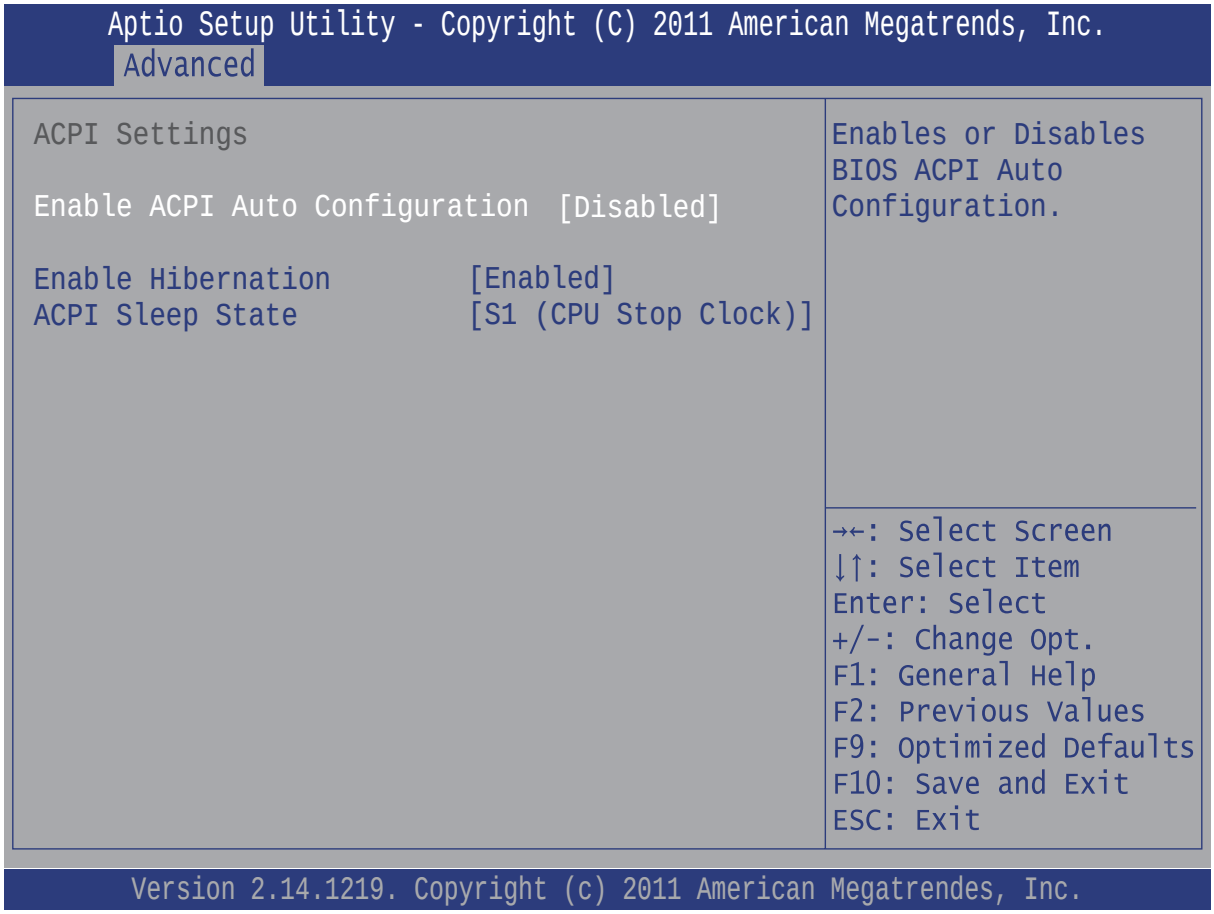
5.2 Advanced

The “Advanced” setting page provides you the options to configure the details of your hardware, such as ACPI, CPU, IDE, USB and Super IO.


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Legacy OpROM Support
Launch PXE OpROM [Disabled]
Launch Storage OpROM [Enabled]
▶ ACPI Settings
▶ S5 RTC Wake Settings
▶ CPU Configuration
▶ IDE Configuration
▶ USB Configuration
▶ F81801 Super IO Configuration
▶ F81801 H/W Monitor
Enable or Disable Boot Option for Legacy Network Devices.
→←: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit
Version 2.14.1219. Copyright (c) 2011 American Megatrendes, Inc.

Setting	Description
ACPI Settings	See Section 5.2.1
S5 RTC Wake Settings	See Section 5.2.2
CPU Configuration	See Section 5.2.3
IDE Configuration	See Section 5.2.4
USB Configuration	See Section 5.2.5
F81801 Super IO Configuration	See Section 5.2.6
F81801 H/W Monitor	See Section 5.2.7

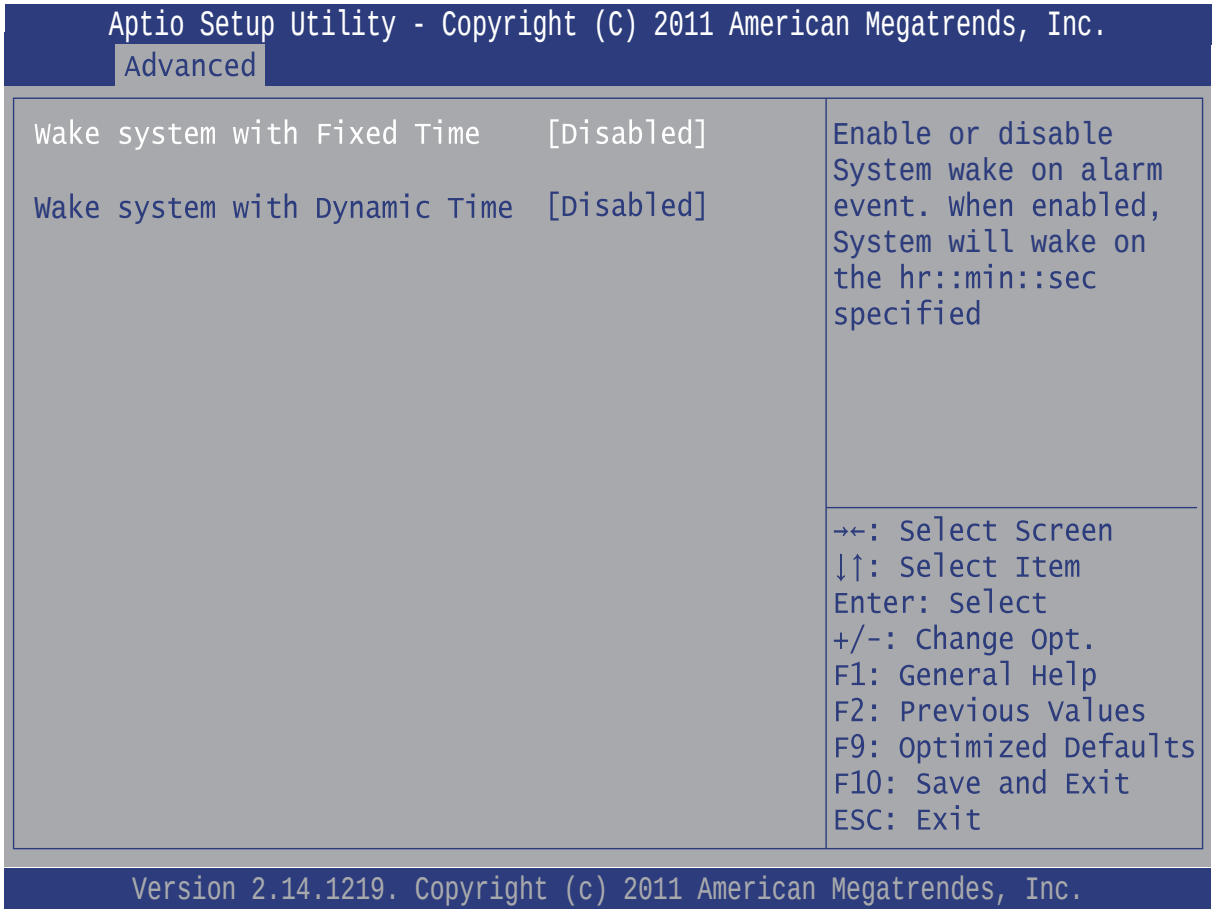
5.2.1 ACPI Settings


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Advanced
ACPI Settings
Enable ACPI Auto Configuration [Disabled]
Enable Hibernation [Enabled]
ACPI Sleep State [S1 (CPU Stop Clock)]
Enables or Disables BIOS ACPI Auto Configuration.
→←: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit
Version 2.14.1219. Copyright (c) 2011 American Megatrendes, Inc.

Setting	Description
Enable ACPI Auto Configuration	**Enable** or **Disable** (default) BIOS ACPI Auto Configuration.
Enable Hibernation	**Enable** (default) or **Disable** system ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
ACPI Sleep State	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed. ► Options: **Suspend Disabled**, **S1 (CPU Stop Clock)** (default).

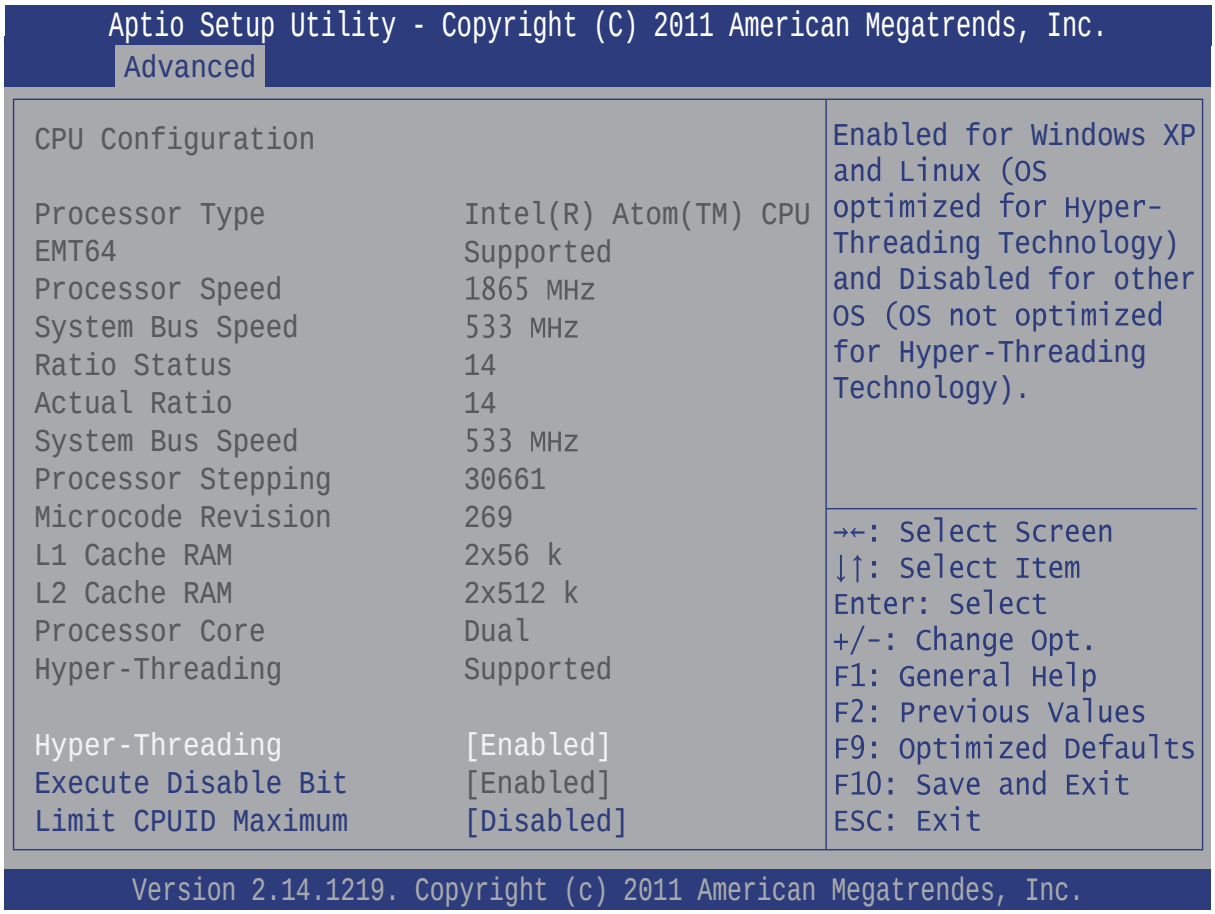
5.2.2 S5 RTC Wake Settings

Enable system to wake from S5 using RTC alarm.


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Advanced
Wake system with Fixed Time [Disabled]
Wake system with Dynamic Time [Disabled]
Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified
→←: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit
Version 2.14.1219. Copyright (c) 2011 American Megatrendes, Inc.

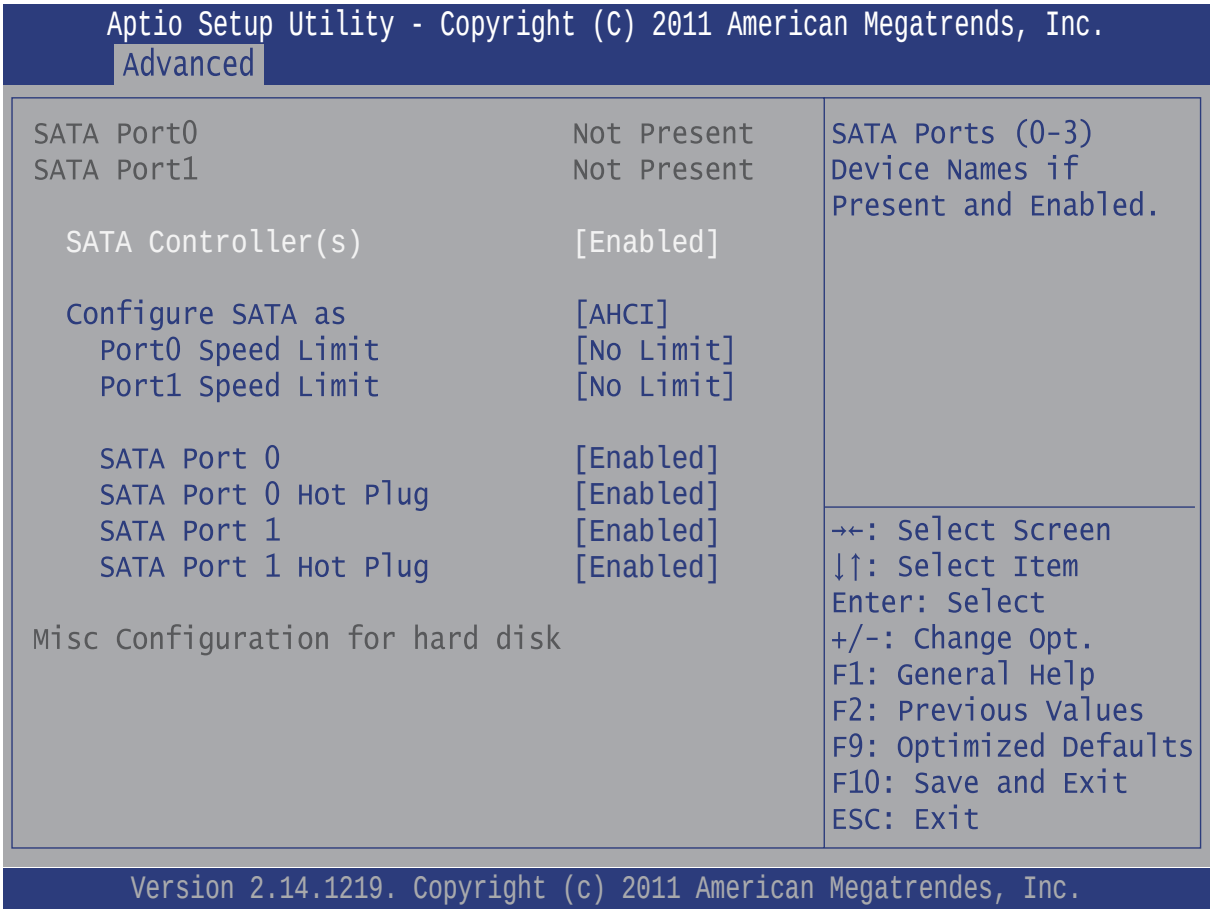
Setting	Description
Wake system with Fixed Time	**Enable** or **Disable** (default) System wake on alarm event. When enabled, System will wake on the hr::min::sec specified.
Wake system with Dynamic Time	**Enable** or **Disable** (default) System wake on alarm event. When enabled, System will wake on the current time + Increase minute(s).

5.2.3 CPU Configuration


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Advanced
CPU Configuration
Processor Type Intel(R) Atom(TM) CPU
EMT64 Supported
Processor Speed 1865 MHz
System Bus Speed 533 MHz
Ratio Status 14
Actual Ratio 14
System Bus Speed 533 MHz
Processor Stepping 30661
Microcode Revision 269
L1 Cache RAM 2x56 k
L2 Cache RAM 2x512 k
Processor Core Dual
Hyper-Threading Supported
Hyper-Threading [Enabled]
Execute Disable Bit [Enabled]
Limit CPUID Maximum [Disabled]
Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).
→←: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit
Version 2.14.1219. Copyright (c) 2011 American Megatrendes, Inc.

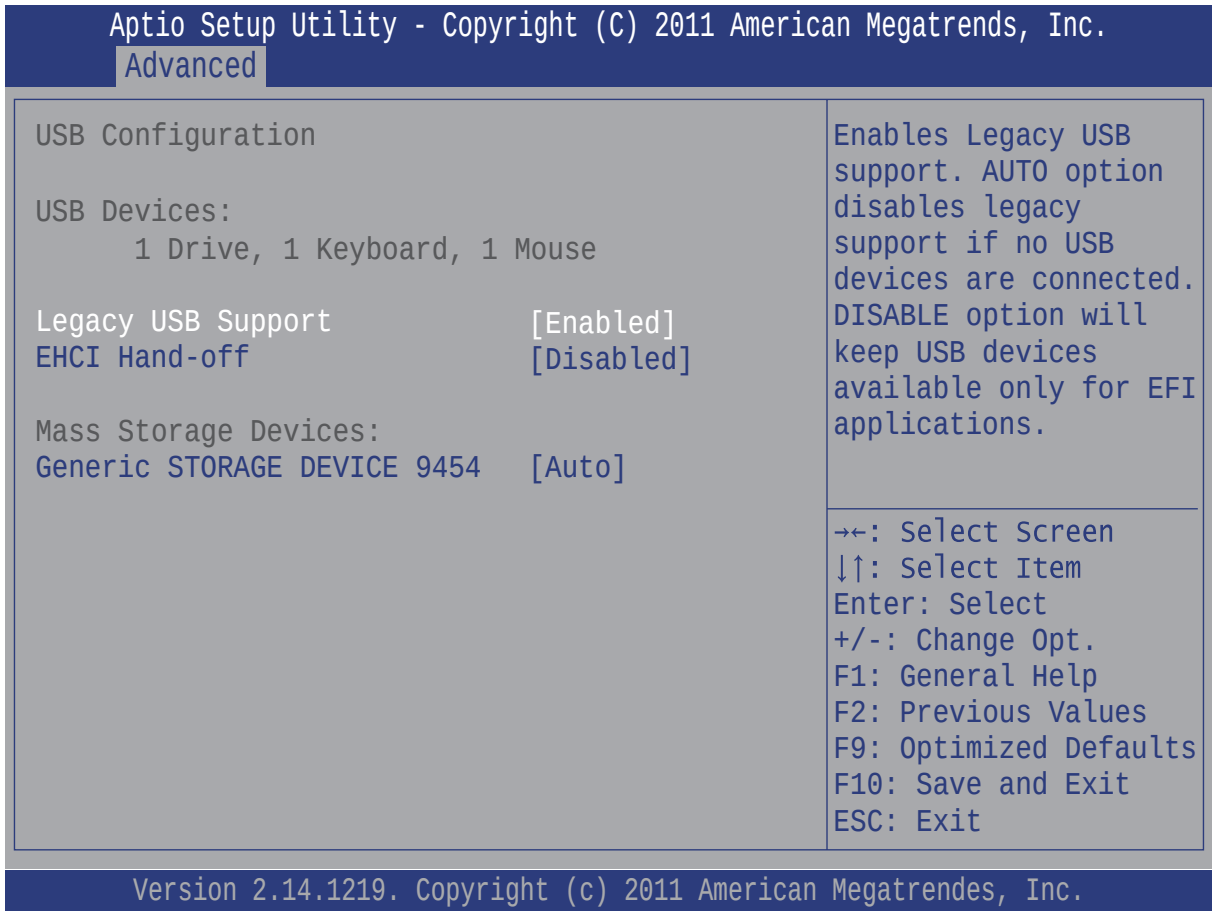
Setting	Description
Hyper-threading	**Enabled** (default) for Windows XP and Linux (OS optimized for Hyper-threading Technology) and **Disabled** for other OS (OS not optimized for Hyper-threading Technology).
Execute Disable Bit	XP can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3.) ► Options: **Enabled** (default) and **Disabled**.
Limit CPUID Maximum	Disabled for Windows XP ► Options: **Enabled** and **Disabled** (default).

5.2.4 IDE Configuration


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Advanced
SATA Port0 Not Present
SATA Port1 Not Present
SATA Controller(s) [Enabled]
Configure SATA as [AHCI]
Port0 Speed Limit [No Limit]
Port1 Speed Limit [No Limit]
SATA Port 0 [Enabled]
SATA Port 0 Hot Plug [Enabled]
SATA Port 1 [Enabled]
SATA Port 1 Hot Plug [Enabled]
Misc Configuration for hard disk
SATA Ports (0-3) Device Names if Present and Enabled.
→←: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit
Version 2.14.1219. Copyright (c) 2011 American Megatrendes, Inc.

Setting	Description
SATA Controller(s)	SATA Ports (0-3) Device Names if Present and Enabled. ► Options: **Enabled** (default) and **Disabled**.
Configure SATA as	Select a configuration for SATA Controller. ► Options: **IDE**, **AHCI** (default).
Port0/1 Speed Limit	Select Port0/1 AHCI Speed Limit. ► Options: **No Limit** (default), **GEN1 Rate**, **Gen2 Rate**
Port 0/1	**Enable** (default) or **Disable** SATA Port.
Port 0/1 Hot Plug	Designates this port as Hot Pluggable. ► Options: **Enabled** (default) and **Disabled**.

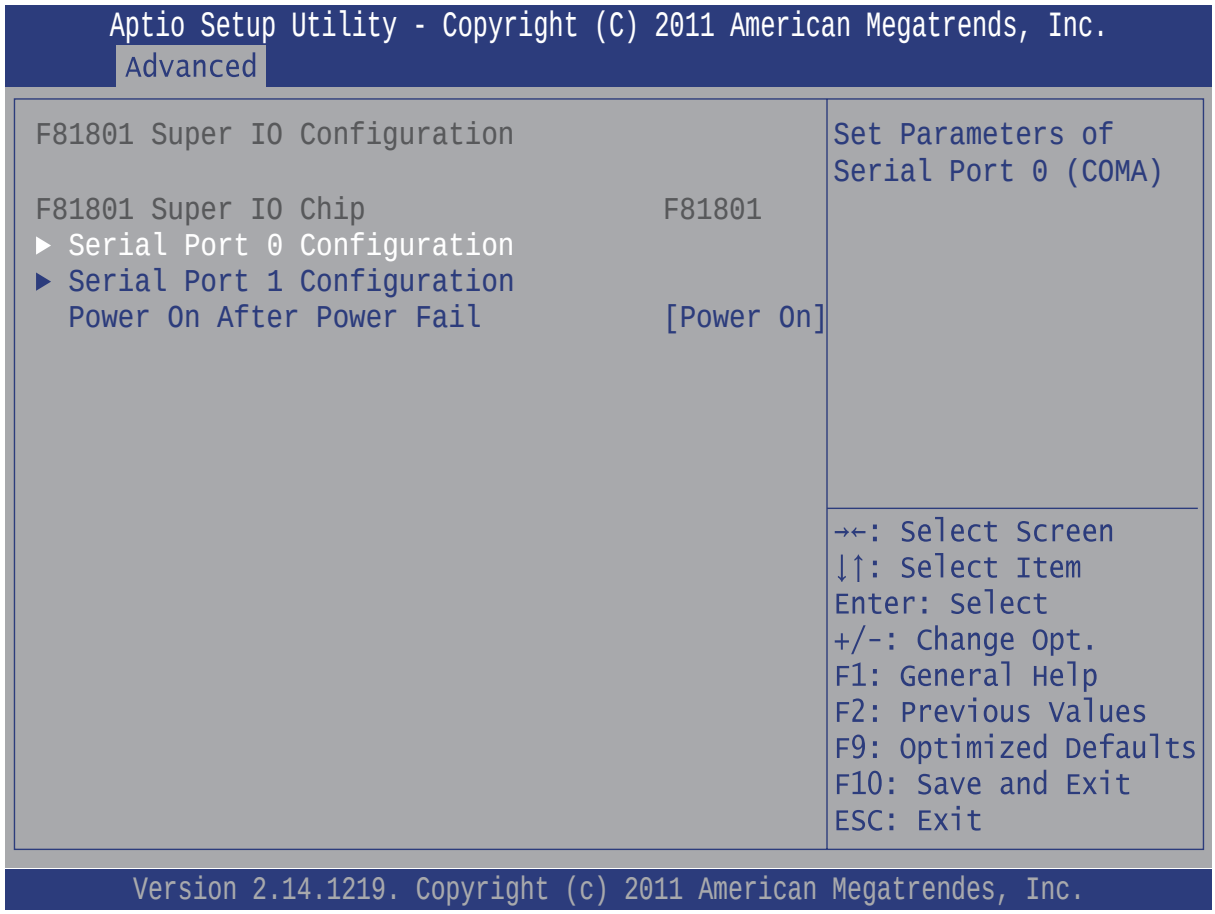
5.2.5 USB Configuration


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Advanced
USB Configuration
USB Devices:
1 Drive, 1 Keyboard, 1 Mouse
Legacy USB Support [Enabled]
EHCI Hand-off [Disabled]
Mass Storage Devices:
Generic STORAGE DEVICE 9454 [Auto]
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
→←: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit
Version 2.14.1219. Copyright (c) 2011 American Megatrendes, Inc.

Setting	Description
USB Devices:	
Legacy USB Support	**Enables** (default) Legacy USB support. **AUTO** option disables legacy support if no USB devices are connected. **DISABLE** option will keep USB devices available only for EFI applications.
EHCI Hand-off	This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver. ► Options: **Enabled** and **Disabled** (default).

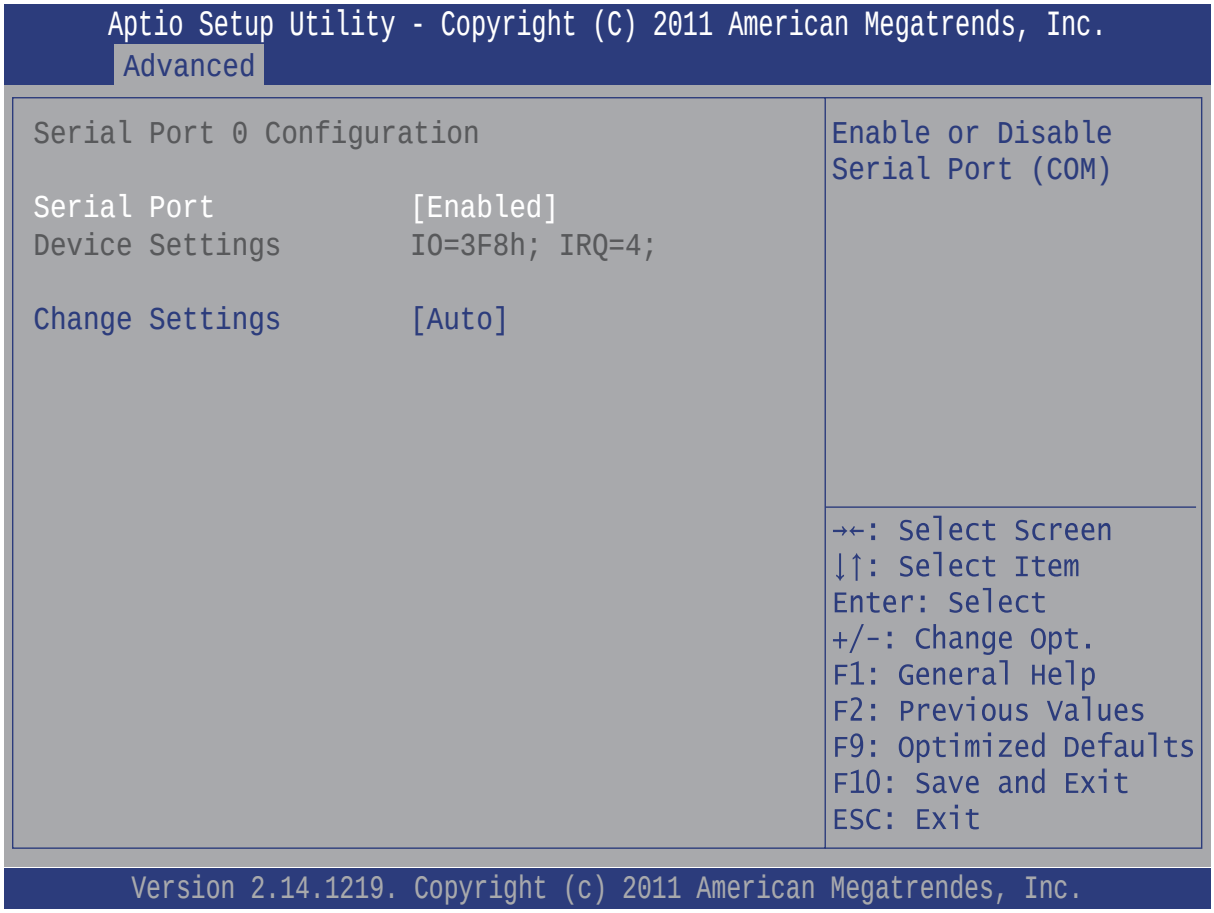
Mass Storage Devices:	
Generic STORAGE DEVICE 9454	Mass storage device emulation type. 'AUTO' enumerates devices less than 530MB as floppies. Forced FDD option can be used to force HDD formatted drive to boot as FDD (e.g. ZIP drive). ► Options: **Auto** (default), **Floppy**, **Forced FDD**, **Hard Disk**, **CD-ROM**

5.2.6 F81801 Super IO Configuration


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Advanced
F81801 Super IO Configuration
F81801 Super IO Chip F81801
▶ Serial Port 0 Configuration
▶ Serial Port 1 Configuration
Power On After Power Fail [Power On]
Set Parameters of Serial Port 0 (COMA)
→←: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit
Version 2.14.1219. Copyright (c) 2011 American Megatrendes, Inc.

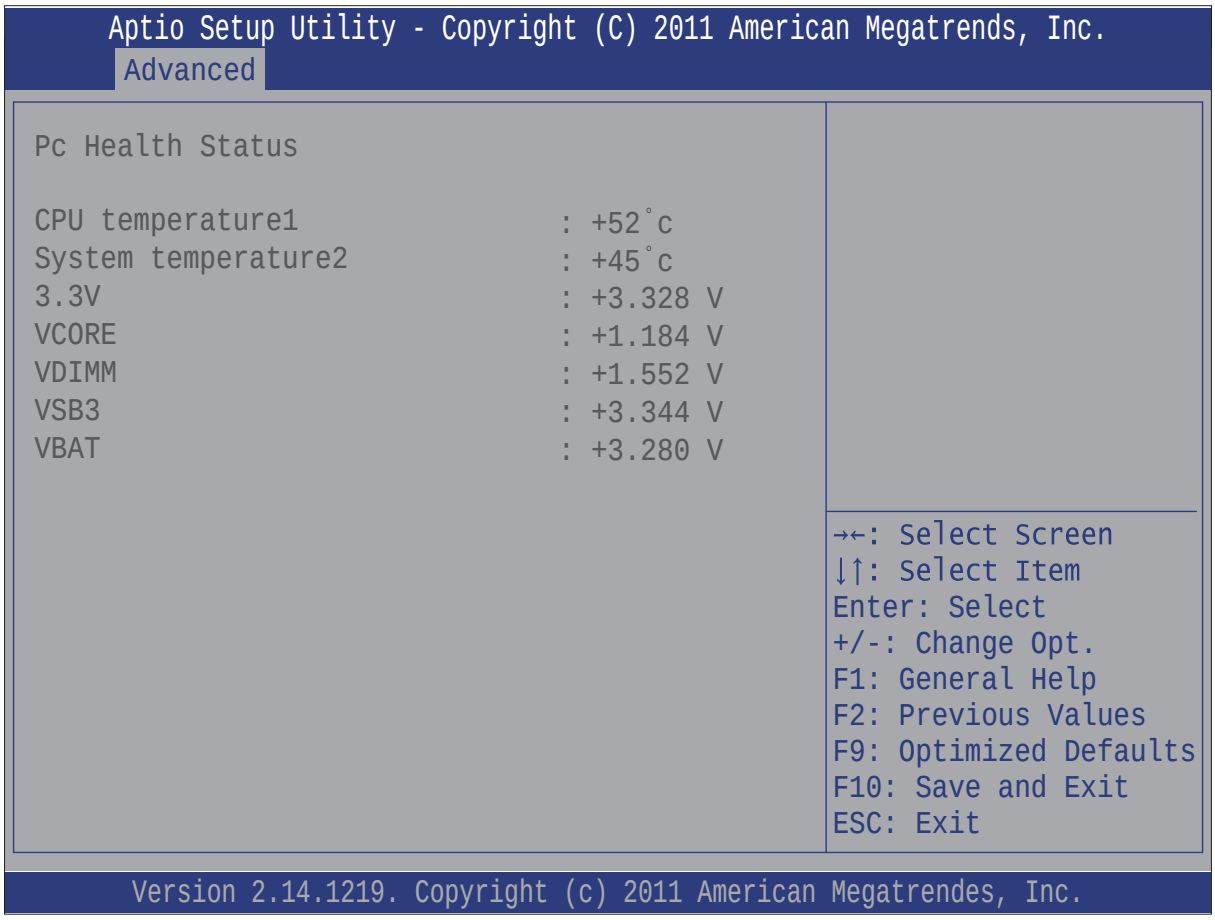
Setting	Description
Serial Port 0/1 Configuration	See Next Tab
Power On After Power Fail	Specify what state to go to when power is re-applied after a power failure. ► Options: **Power Off**, **Power On** (default), **Last State**

Serial Port 0/1 Configuration

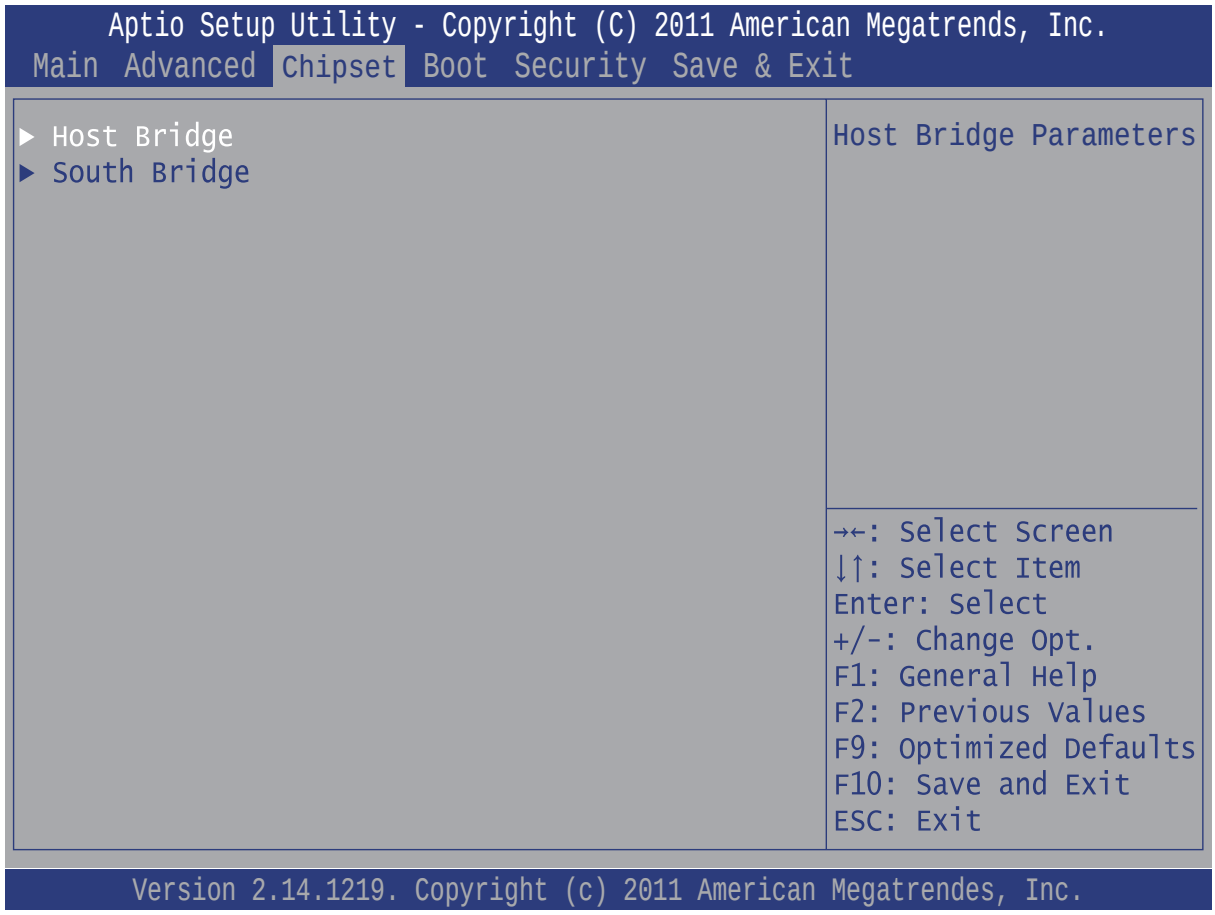


Setting	Description
Serial Port	**Enable** (default) or **Disable** Serial Port (COM)
Change Settings	Select an optimal setting for Super IO device.

5.2.7 F81801 H/W Monitor

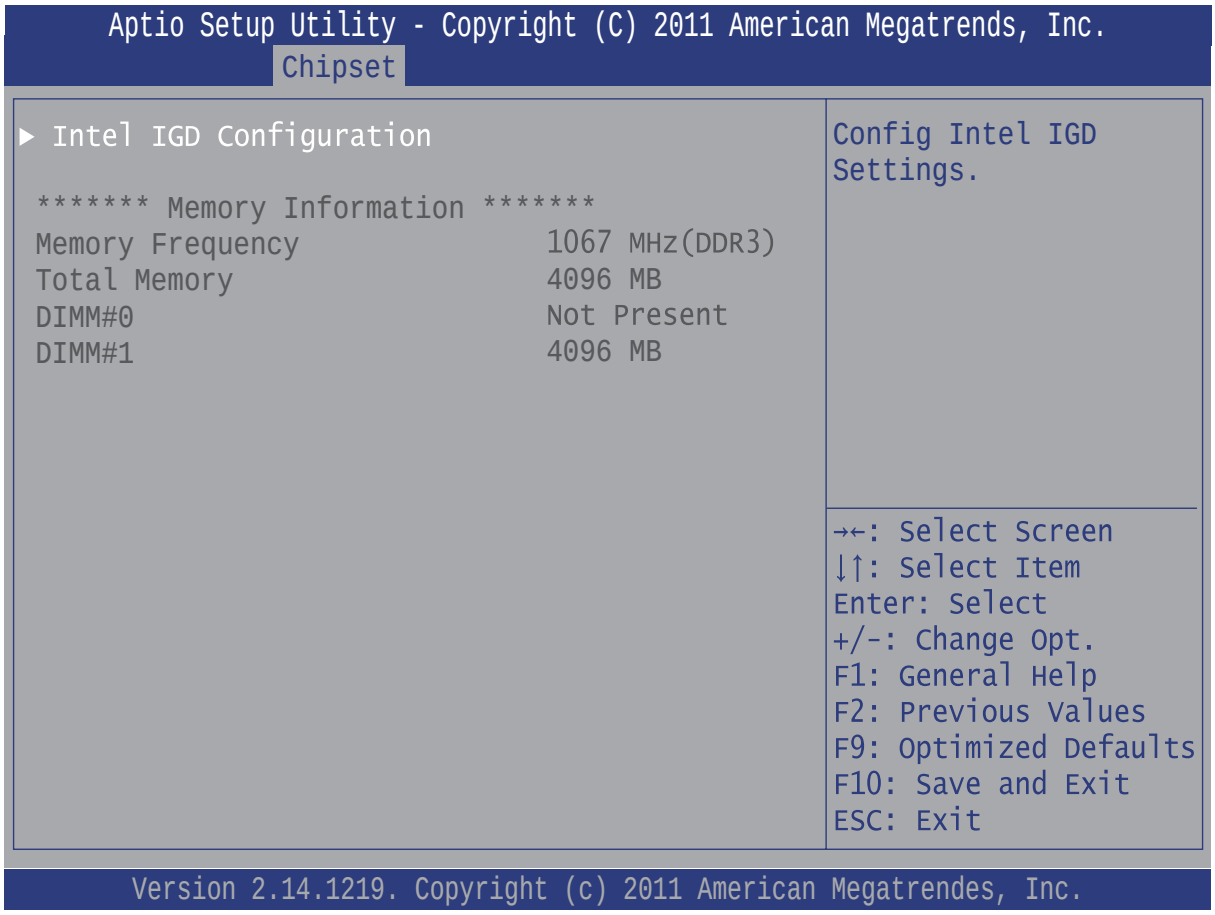


5.3 Chipset


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
▶ Host Bridge
▶ South Bridge
Host Bridge Parameters
→←: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit
Version 2.14.1219. Copyright (c) 2011 American Megatrendes, Inc.

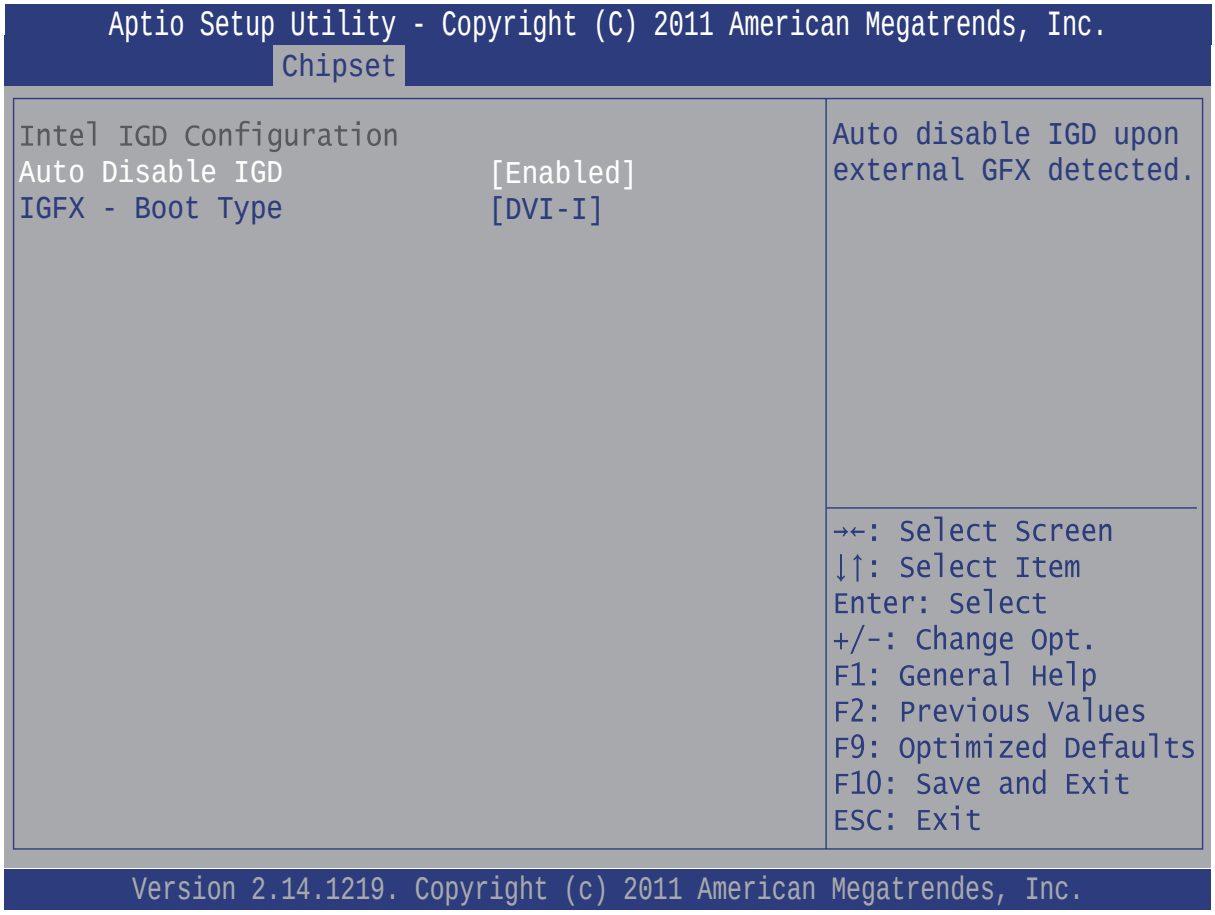
Setting	Description
Host Bridge	See Section 5.3.1
South Bridge	See Section 5.3.2

5.3.1 Host Bridge



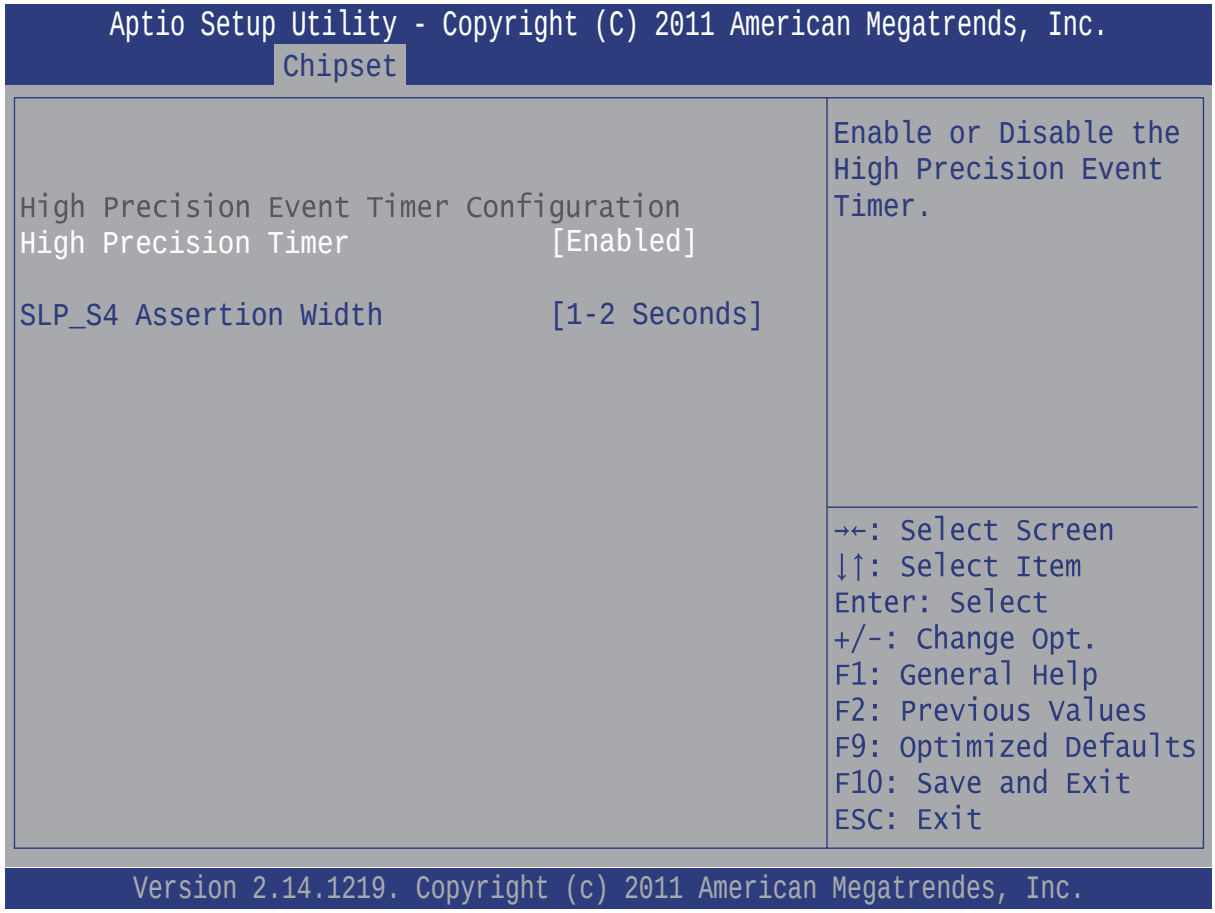
Setting	Description
Intel IGD Configuration	See Next Tab

Intel IGD Configuration


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Chipset
Intel IGD Configuration
Auto Disable IGD [Enabled]
IGFX - Boot Type [DVI-I]
Auto disable IGD upon external GFX detected.
→←: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit
Version 2.14.1219. Copyright (c) 2011 American Megatrendes, Inc.

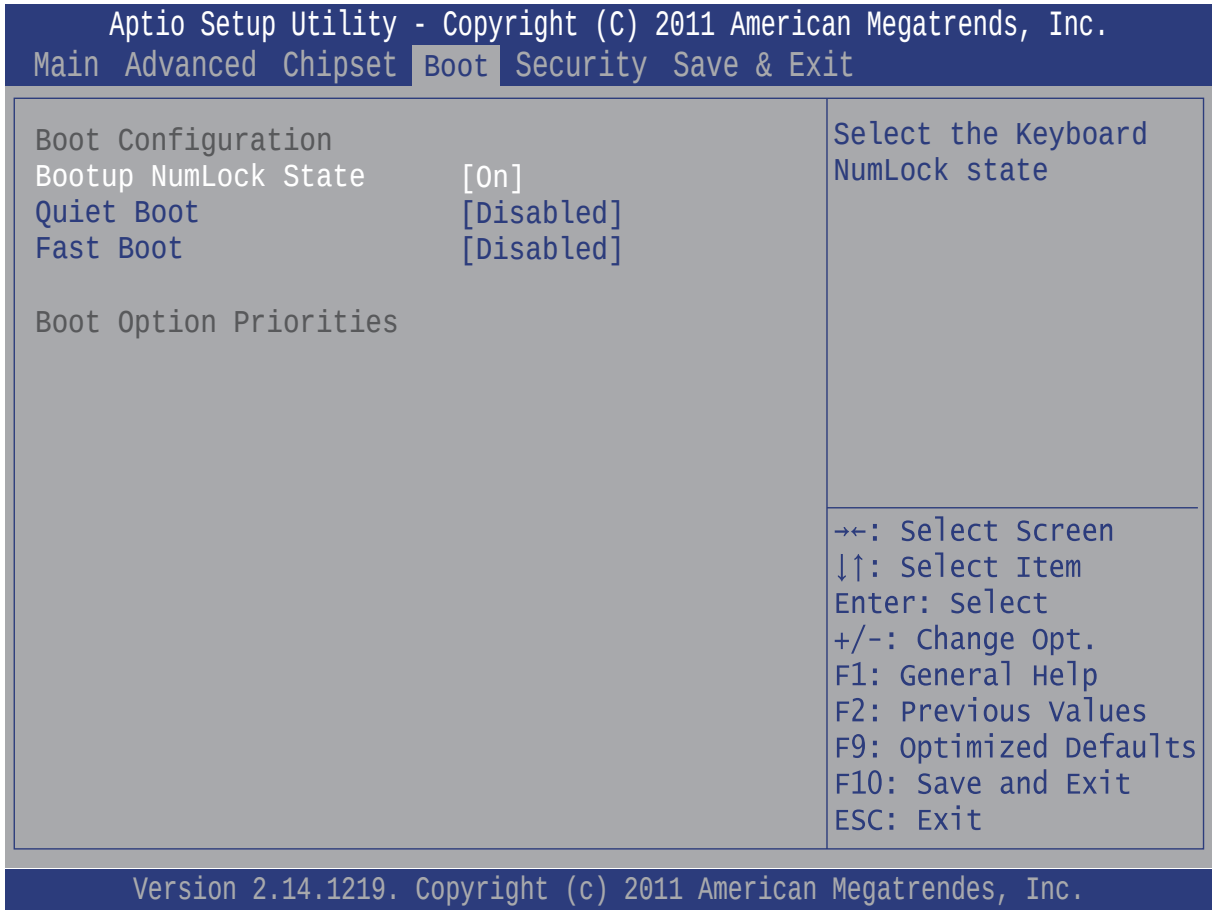
Setting	Description
Auto Disable IGD	Auto disable IGD upon external GFX detected. ► Options: **Enabled** (default) and **Disabled**.
IGFX - Boot Type	Select the Video Device which will be activated during POST. This has no effect if external graphics present. ► Options: **DVI-I** (default) and **DVI-D**.

5.3.2 South Bridge


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Chipset
High Precision Event Timer Configuration
High Precision Timer [Enabled]
SLP_S4 Assertion Width [1-2 Seconds]
Enable or Disable the High Precision Event Timer.
→←: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit
Version 2.14.1219. Copyright (c) 2011 American Megatrendes, Inc.

Setting	Description
High Precision Timer	**Enable** (default) or **Disable** the High Precision Event Timer.
SLP_S4 Assertion Width	Select a minimum assertion width of the SLP_S4# signal. ► Options: **1-2** (default)**/2-3/3-4/4-5 Seconds**

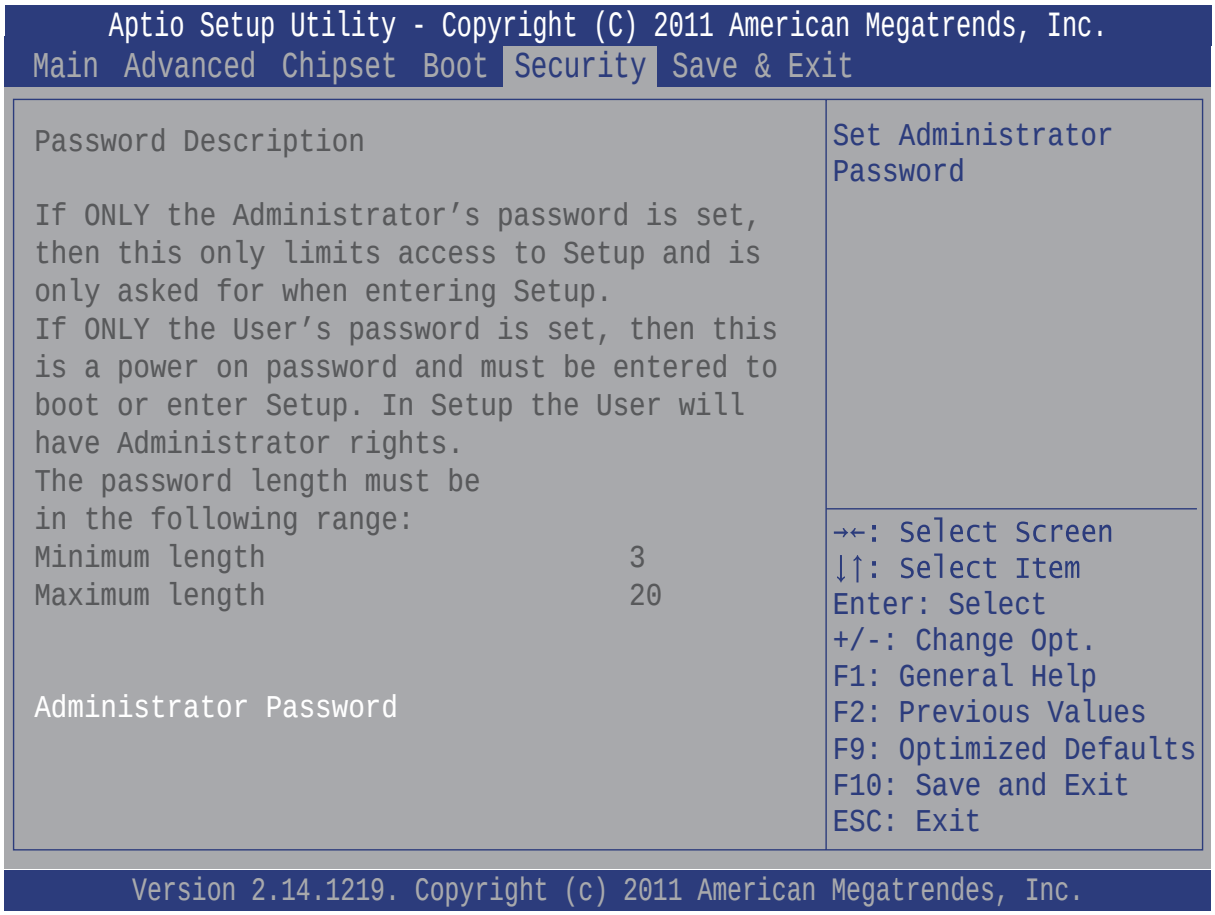
5.4 Boot


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Boot Configuration
Bootup NumLock State [On]
Quiet Boot [Disabled]
Fast Boot [Disabled]
Boot Option Priorities
Select the Keyboard NumLock state
→←: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit
Version 2.14.1219. Copyright (c) 2011 American Megatrendes, Inc.

Setting	Description
Bootup NumLock State	Select the keyboard NumLock state ► Options: **On** (default), **Off**
Quiet Boot	**Enable** or **Disable** (default) Quiet Boot option.
Fast Boot	**Enable** or **Disable** (default) boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

5.5 Security

The **Security** menu sets up the administrator password. Once an administrator password is set up, this BIOS SETUP utility is limited to access and will ask for the password each time any access is attempted.


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Password Description
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.
The password length must be in the following range:
Minimum length 3
Maximum length 20
Administrator Password
Set Administrator Password
→←: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit
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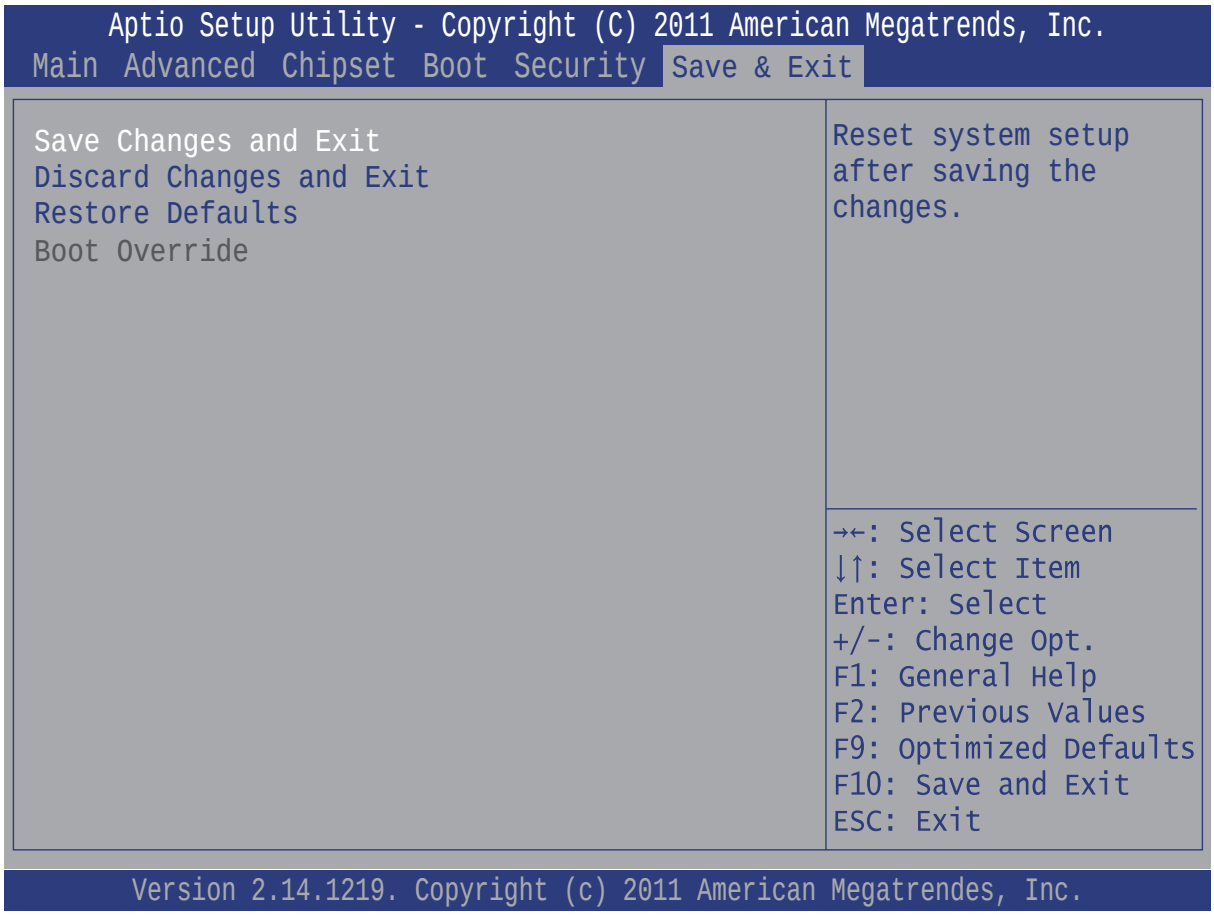
Setting	Description
Administrator Password	To set up an administrator password: 1. Select **Administrator Password**. The screen then pops up an **Create New Password** dialog. 2. Enter your desired password that is no less than 3 characters and no more than 20 characters. 3. Hit [Enter] key to submit.

5.6 Save & Exit


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Save Changes and Exit
Discard Changes and Exit
Restore Defaults
Boot Override
Reset system setup after saving the changes.
→←: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit
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Setting	Description
Save Changes and Exit	Saves the changes and resets the system. ► Enter the item and then a dialog box pops up: **Save configuration and exit?**
Discard Changes and Exit	Exit system setup without saving any changes. ► Enter the item and then a dialog box pops up: **Quit without saving?**
Restore Defaults	Restore/Load Default values for all the setup options. ► Enter the item and then a dialog box pops up: **Load Optimized Defaults?**
Boot Override	**Boot Override** presents a list of boot devices on screen. Select the device to boot up the system regardless of the currently configured boot priority.

Appendix

Watchdog Timer (WDT) Setting

WDT is widely applied to industry computers to monitor activities of CPU. The programmed application triggers WDT with adequate timer setting depending on its requirement. Before WDT counts down to zero, the functional system will reset the counter. In case the WDT counter is not reset by an abnormal system, it will counts down to zero and then reset the system automatically.

This computer supports the watchdog timer up to 255 levels for users for software programming. Below please take the source code written in C for a WDT application example.

```
outportb(0x4e, 0x87);       /* initial IO port */
outportb(0x4e, 0x87);     /* twice,  */

outportb(0x4e, 0x07);     /* point to logical device */
outportb(0x4e+1, 0x07);   /* select logical device 7 */
outportb(0x4e, 0xf5);     /* select offset f5h */
outportb(0x4e+1, 0x40);   /* set bit5 = 1 to clear bit5 */
outportb(0x4e, 0xf0);     /* select offset f0h */
outportb(0x4e+1, 0x81);   /* set bit7 =1 to enable WDTRST# */
outportb(0x4e, 0xf6);     /* select offset f6h */
outportb(0x4e+1, 0x05);   /* update offset f6h to 0ah :10sec */
outportb(0x4e, 0xf5);     /* select offset f5h */
outportb(0x4e+1, 0x20);   /* set bit5 = 1 enable watch dog time */

outportb(0x4e, 0xAA);     /* stop program , Exit */
```